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Golden Plovers—Bird Aeronauts

While man-made wings carry planes to and from Newark Airport, bird fliers enact their drama nearby

By JOHN F. KUERZI
Illustrated by Roger Tory Peterson

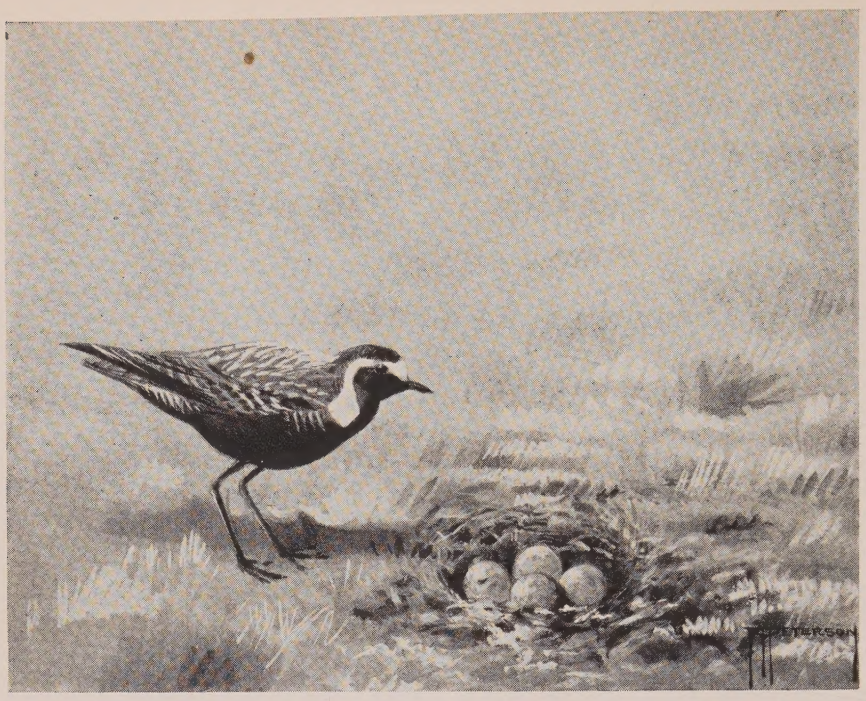
NEWARK airport fairly hums with activity. At all hours, crack airplane motors idle, planes taxi around and poise for the take-off. The ground crew is always on its toes. Every so often—and seemingly all at once—everything is set. A throttle is opened wide, and, with a roar, a plane slips down the runway into the wind, climbs easily and strikes a straight course through the heavens. Perhaps, a few minutes later, a steady drone becomes audible and soon the 8:40 eastbound from Chicago looms out of the west. The pilot has been talking with Newark by radio and is riding in on the beam. All is in readiness and, as it is dusk, the floodlights are turned on. The incoming plane maneuvers in the air, motors idling, in great sweeps over the port. The pilot is careful to give the throttle an occasional burst to clear out the carburetors so that the full lifting power of the engines is instantly available. In another moment, this trim-looking ship has leveled off and is down to a perfect three-point landing. There is a roar as the plane taxis to position and in another moment stillness. Even the lights go down until the next plane is heard from.

This is repeated over and over again during a normal day and night at the port. It becomes routine but never is there a relaxation of the watch-like precision; always the same perfect timing, the same military accuracy and execution. Every device and precision instrument that expert craftsmen and inventors can plan has gone into those airliners that so casually drop in and take off; the result of generations of inventive genius, of the best mechanical minds in the world, to accomplish—what every bird does automatically, but nonetheless admirably—the feat of safe travel through the air, to assure those who take to the air that they may reasonably anticipate a happy landing at the point marked on a strip of ticket.

Out a little way on these same meadows that harbor the airport, another little drama is being quietly enacted. Without charts, weather reports, floodlights or radio, unheralded and unsung, birds—shorebirds that breed in summer on far flung tundras of Mackenzie or Hudson Bay, and winter in the southern continent—somehow have found and are finding their way to the Atlantic coast and down over the port. As autumn comes they are pressing ever southward, hardly pausing to rest or feed, some accomplishing the many hundreds of miles in one jump. Here is romance and glamor that not even the great air service can match.

The golden plover is easily the aristocrat of the shorebirds. In its remarkable journeys to and from its Arctic home, it flies night and day. If weather aloft is good, the flocks may travel more than two thousand miles on a true course over the ocean from eastern Canada to South America with scarcely an interim for rest. September hurricanes merely ground the birds until their blow is spent. These aeronautical feats are so remarkable—even as compared with man's mechanical triumphs in the upper air—that the bird itself is worth getting to know. And there are few better ways of making this acquaintance than out back of the Newark airport.

These plovers are on the go by late summer and unless grounded by storms they may pass up the port completely. But nearly every September at least one West Indian hurricane comes roaring up the coast or causes severe back-



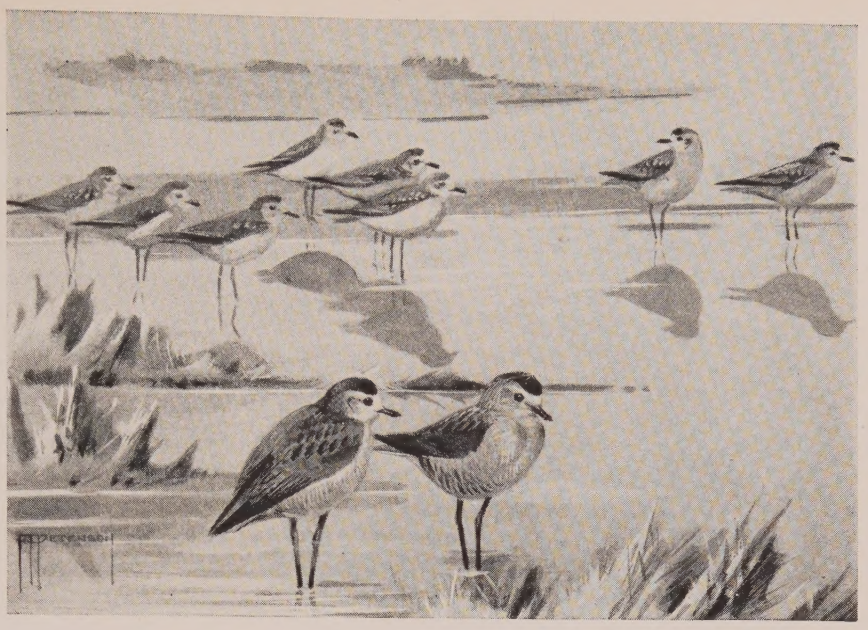
THE NEST OF THE GOLDEN PLOVER ON SOME FAR-FLUNG TUNDRA OF THE NORTH WHENCE WANING SUMMER WILL SEE IT LEAVE ON A LONG FLIGHT

lashing northeast gales. The airport has been watching the barometer and the weather reports for days. Long before the full fury of the storm strikes, all planes have been grounded. But far out over the ocean, on a bee-line between Labrador and South America, long wavering lines and groups of swiftly-moving birds are slipping along, calling softly. At a distance the birds seem falcon-like in build except that the tails are considerably shorter. They are streamlined to the last notch. Blunt-headed, their largest dimension is just ahead of center. The long, slim-cut wings are powerful. There are, of course, no landmarks, compass needle or column of mercury to guide them. The weather gradually glowers, becomes heavy; the visibility drops sharply toward zero and a wind begins to build up. The serried ranks close up a trifle and the calls are more frequent. That night the storm breaks over the ocean and the birds bravely fight it out. The weaker ones are relentlessly forced down into the sea but many manage to keep going through the murk. Some make land on Cape Cod and outlying points on Long Island and in New Jersey. Others, less fortunate, are spattered inland like so many flecks of foam. All during the storm, scattered bands have somehow been finding the marshes back of the Newark airport, making forced landings and settling down to weather the storm.

If one can find himself a sou'wester and pair of waders, it is thrilling to watch these little sky riders come on, following a trajectory somewhat inclined to horizontal, calling a soft, musical "queedle, queedle." When they are over their favorite part of the meadows—hard mud grown more or less with weeds—they circle around in broad sweeps, at seventy miles per hour or better, and finally come down to a perfect landing. But all the while the storm has been battering and drenching you and you're glad to beat an unceremonious retreat to the car.

When the storm has spent itself, it is worth while to return. The airport is only thirty minutes from New York so, if the skies show signs of clearing by afternoon, it is a good plan to sneak away from the office early. The goldens are sure to be up on the fill—a reasonably dry sector of the marsh that strongly resembles their beloved Arctic tundra. There is likely to be a considerable number of the birds. They have been coming on all day, slowly reassembling their scattered ranks. Typical plovers in build, large-headed, powerfully-built birds with deep chests and husky shoulders, they are heavier, chunkier birds than killdeers and have a far more innocent, confiding disposition. Their backs are washed with golden and their breasts—so lustrous black in spring—are now practically white. The young of the year are softer, duller colored. They are so tame that one can walk up to within a few feet of them. Curiously, instead of gorging themselves with food after their long flight, they are strolling around, stretching their wings, softly calling "que-dee, que-dee" and occasionally taking a few turns around. As newcomers appear overhead, there is much excitement and concerted "queedling" by the fliers as well as the "ground-crew." The latest contingent readily decoys, and in a few moments they are dropping out of the sky like plummets. The calls and soft "que-dees" of the birds blend into a subtle, charming, wondrously harmonious little aria.

Those goldens had quietly and efficiently performed a feat that they could not have learned. They had steered a true course out over the ocean, and in a time of stress, with no instruments, had found their emergency landing field with remarkable precision. More than that, they had been travelling in close formation, their leadership constantly changing, the moving mass turning and twisting as one bird at high speed. Even with every allowance made for the frailties of human vision, they were easily out-maneuvering the best airplane squadron in the land, just as they had neatly out-navigated the crack overland fliers. They were not "handicapped" with complicated thinking machines, but by a pretty series of reflexes they accomplished more than could have any great aeronaut. Of course, they could not stop to weigh their chances, prepare equipment or consult meteorological experts. Something in their inner selves clicked and off they went, perfectly balanced and coordinated flying machines. The rhythm of their very beings was delicately attuned to their flight and taking off they "wrote a poem across the skies."



OUT IN THE MARSHES IN THE GATHERING DUSK, THE PLOVERS ARE QUIETLY RESTING FOR THE NEXT LAP OF THEIR JOURNEY

Everyone admires the lightning responses and perfect timing of a squash star, an expert chauffeur or a crack pilot—men who by emulating the bird and putting aside the excess baggage of their brains, free themselves to react instantly to the fast-moving ball, the road emergency, or the handling of a flying ship. It is only by conscious effort, concentration, training and long practice that these feats are possible for man. But the plover—a mere bird who presumably can not begin to learn—does many of these things automatically, instinctively and beautifully; his responses and reflexes are lightning quick and, given the stimulus, the bird will respond instantly in a certain, definite and often predictable way. There is no time in the plover's economy—no more than in the pilot's—for contemplation, reverie and the weighing of pros and cons. He must come through, he must do the obvious thing whether it is finding his way far out over the ocean at night, or to the emergency field during the storm, or merely keeping his place in the fast moving flock.

The sustained flight over the sea—as with Lindbergh and the others—resulted from or was the culmination of a gradual building up of toughness and skill, from daily flights over the tundra in quest of food. As a matter of fact, if those daily flights were strung together on end instead of forming circles, they would cover a surprising number of miles. On long sustained flights, moreover, the birds are clearly drawing on those deeper levels of energy that are evoked only when living creatures drive themselves beyond the ordinary daily routine. Lindbergh would never have known that he could stay awake on the long grind across the sea if he had not tried it, nor could he have known that an ordinary plane would hang together for the duration of such a trip. But he was game, tried it, and won. So are the golden plovers. Their type of mentality perhaps does not go toward the building of a great civilization; it consists chiefly in abundant and vibrant living through the furtherance of a craft or an art. And the bird itself, in a manner of speaking, is a work of art, his calls and notes are wondrously harmonious, even considered musically; his plumage and carriage are those of a true aristocrat and he is a most efficient flying machine. Many a human can do or be no more.

But we are digressing. Far out on those marshes it was easy just to be a plover with those dauntless little sky riders, and to rejoice with them over their safe delivery and reunion. The mere observer almost feels that he might be standing on the shore of Hudson Bay, or on the pampas of Argentina or in some other remote land that these birds love. But as the westerly sky gradually reddens and a stillness and dimness pervade the meadows, a steady drone is heard and presently lights appear over Newark airport. It is the mail from Boston. The storm signals are down. In an instant, the floodlights are turned on and down the great bird comes. Off go the lights. Out on the marshes in the gathering dusk, the plovers are still, quietly resting for the next lap of their journey, preparing for what may be a non-stop flight to remote South America!

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SOLITUDE?

by ROBERT CLARK

The singing of cascading waterfall,
A whisper in the trees,
The carol of a hermit thrush, unseen,
The hum of tardy bees;
The alchemy in wild syringa bloom,
From bark and leaves of pine,
The changing forms in slowly moving clouds
Afloat in blue divine.
All these are mine while from this verdant couch
I gaze through spaceless space
And on the spirit-canvas of the mind
Beloved ideals I trace.
I'm less alone than when in city's throng
I see no friendly face.

TOO MUCH EFFICIENCY

Some remarks by a "big game hunter"

By A. E. ANDREWS

Illustrated by Russell O. Berg

DESPITE many antitheses, we hunters, fishermen, hikers, and conservationists could have our wildlife and use it—if only we would. I'm a hunter and a fisherman. I've lived a fortieth of all the time from Galilee to Radio City. I've seen changes and I myself have changed. In spite of this, however, I'm still a hunter and a fisherman.

Haven't I hunted quail? I have. I've followed the dogs and loved them. I love the quail, too. But I never bagged a quail. One reason is that I couldn't hit one; the other reason is that I don't want to hit one.

I fish, too. Only the other evening after a hard day's work, at dusk, on an Indiana lake, I landed three black bass, two rock bass and a bluegill, on an artificial fly; and turned them all back. Sometimes I keep them.

There's a big difference between the developments of fishing and of hunting. Our modern efficiency at tackle-making has saved the minnows and crawfish for the fish; but our modern firearms have destroyed the game.

When I was a youth I hunted with a rifle. Sometimes I could put the thirty grains of lead in an old-fashioned .22 black-powder short through a running rabbit. I was not a crack shot but sometimes I could do crack shooting.

When the children came, I disposed of the rifle. Now that they are grown, I find the ammunition I used is out of style. For example, when I began to study rifles the old favorite 32-40 would travel 1400 feet muzzle velocity; but today a boy can buy a box of .22's that will travel that fast or faster. To me that does not seem consistent with men husking corn a quarter-mile away from the squirrel woods. And I wonder if that is not the reason that many are turning to the old cap-and-ball rifles of our pioneer fathers. I don't know, but I wonder. A young philosopher, who used to bat .472 on the Athens baseball club and went down to the Olympic world series and got a medal—something like that—and who barely escaped a tea party of the kind given for Schoolmaster Socrates—this chap said something about an excess of virtue destroying the virtue itself. Maybe modern efficiency in firearms is too much of a good thing.

I sometimes feel homesick for a good old-fashioned rifle, but the modern efficiency of firearms seems to repel me. The last time I shot at a squirrel I had a choking sensation in my lungs. I thought I was going to hit the squirrel. I was shooting a heavy, leather-backed, lemon-wood bow. We were after rabbits, but the farmer said if we'd watch around the hickories we might shoot a fox squirrel. We'd got into the woods and I looked back and a squirrel was silhouetted on a sapling, looking as if Nature had grown a pitcher handle on the tree. The squirrel was probably eighty yards away. And my stick of feathered birch looked as if it would strike the squirrel in the head. But the arrow hit the tree, dead-center, just two or three inches from the animal's head—and I felt better. I just don't kill squirrels any more. I don't blame men who do, within reason and moderately, and if killing squirrels makes them happy. Men are worth more than squirrels. Maybe I could shoot squirrels with my good, old uncle's patch-and-ball. I doubt it—but maybe I could.

I hunt. Chiefly I hunt rabbits, but sometimes I hunt bears, wildcats, lions and tigers. The dangerous brutes are rotten stumps or decayed logs. I remember one that crouched on a slope, across a ravine, in a colorful October woodland. It was gray and tan and large. We aimed our bluntheads at it and shot our quivers empty, and we pierced its decayed heart and stuck arrows in its legs and paws, and we even put one into its head. There was no disturbing noise, only the flit and low thud of arrows. The stretch of muscle, the sodden thud of the shafts, the penetration of the feathered missiles into that mouldering log were a delight to us—a

glowing, satisfying delight. Perhaps I am in my dotage, but my partner is not; he's young.

It is not dotage. As a boy I made poor, flabby bows of hickory, and our gang of youngsters, in a hilly cow pasture, would roll cow chips down the slopes and shoot them on the hop. It was great sport for me as a kid. It would be great sport now. A cow chip is a homely, Hoosier thing; but, wheeling down a hillside, it becomes sprightly and poetic.

There were times, in recent years, when we went forth for more rugged sport. One howling, Hoosier, December day, with the snow flowing parallel across the landscape, the same companion who helped me slaughter the sleeping old log went with me into the Wabash Valley—the upper, cliff-lined, canyon-like, limestone-bottomed, riffled, pooled, water-willowed Wabash—and we hunted all day. We took a pail for tea, a little sugar, bacon and bread; and my wife, feeling sorry for us, put in a big chunk of home-made fruit cake. We kicked open a drift of leaves, cached our food and pail, and hunted all that forenoon, seeing no rabbits, but slaughtering half a dozen stumps and old logs. We met a trapper. He pointed out a sapling two inches thick and wondered if I could hit it. I hit it, and he marveled at the damage.

At noon we built a fire in the lee of a limestone cliff, got water from a spring, cut three-tined forks from the brush, and in comfort, before the blazing driftwood, the storm blowing its snow streaks above our heads, we ate with keen enjoyment our toasted sandwiches and cake and drank our tea. And when I got home at dusk my wife said we were silly, though I had enjoyed one of the best days of my life. Rabbits? We got none. But we killed all those stumps and logs; drove our arrows into them; stabbed through and through. I was ready to sit down and read, my bloodthirst satisfied, bloodlessly.

But archers are not always without blood stains. When I was shooting only 250 at the American round, I shot rabbits with the bow. I have gone out in a forenoon and killed three rabbits. Usually it is one or none. Once I hit

a rabbit at thirty yards—a very difficult shot. Yet the most beautiful shooting I ever do is the missing. For example, a rabbit stopped behind a sugar tree root, quartering downhill from me, at forty yards. I could see only its head. I put one arrow on the left side of its head; one on the right side; then one between his ears. It was shooting that few could surpass at the target. Evidently he didn't like that third shot; he hurried away. Last fall in southern Indiana I shot an arrow at forty yards just over a rabbit's back, the best shot I made all last season.

One interesting fact about hunting with a bow is this: That you yourself are the hunter. So you learn where game is to be found and what it looks like when hidden. Many pleasant experiences are your reward. I remember following a rabbit track in the snow to a patch of thick, flat greenbriar. The rabbit was hiding there, and it burst out before I got near. But there was also a flock of quail in that shelter, and one hen bird walked out on the snow and looked up at me. I could have touched her with my bow, but she did not seem afraid. We stared at each other most impolitely and then I went away, leaving her and following the rabbit track. No; I did not get the rabbit.

Another fact stands out from my hunting experiences: I've shot rabbits with arrows and found No. 6's in them; but I never, with any kind of weapon, killed a rabbit that had a broadhead in it. Hunting with a bow causes less suffering.

Despite this obvious fact, people will scorn the bow and deprecate the archer. I remember the trapper who wanted to go hunting with me. He had seen me with three rabbits. I consented, though an archer usually does not wish to hunt—usually cannot hunt—as a stunt or demonstration.

The trapper brought a friend with him. The friend walked beside me, frightening the game and growing more skeptical as I missed the fleeing rabbits. Finally, when we reached a woodland, the trapper's friend in-

solently hung his new cap thirty-five yards away in a tree and told me to hit it. I asked him to toss it up. It was a good cap and I did not wish to destroy it. But he only grew the more insistent, and I grew slightly warm about the neck. I pulled out a broadhead an inch and an eighth wide and, by good luck or bad, I hit that cap on the crown, penetrated the fold over the visor and sent the arrow through the visor itself. As the cap dropped to the ground, the trapper doubled up with mirth.

"I knowed what was goin' to happen," he shouted.

I am not saying that others should take up the bow. I am saying that with this romantic and ancient weapon one may satisfy his thirst for hunting and still have most of the game left. Some men may always demand the boom of a shotgun or the whip of a rifle. Some men would prefer dynamite if they could use it safely. Some will shoot at anything that moves and take chances on its being a man. Others may protest against the efficiency and turn with honest delight to the more difficult arts of hiking and photography.

As for me, give me a bow. With it I can hunt in all the thirteen moons and be law-abiding. I can enjoy it all, because I have found that it is not the killing of things that gives me joy, but the touch with the elements and with things. My bow has taken me into sunshine and tempest, lured me abroad on zero mornings in the untracked snow. In my own way I love to hunt. If it is a sin, may God forgive me.

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TOO HARSH THE WINDS

By CARRIE ADAMS BERRY

I ask that May be kind to me
Nor show a treacherous mood—
That her notes be played in harmony
With some rare, sweet interlude.

Too harsh have been the winds of March,
With their discordant pain—
I gladly greet the budding larch,
The gentle, fragrant rain.

Immortal hope and happiness
Breathe through the thrush's song.
Forgotten is dull winter's stress—
Spring strikes a vibrant gong!

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The Condor of the Andes

By EDITH M. LAING

An Indian legend tells that once all the birds were naked. At last an "advanced thinker" among them stirred up dissatisfaction with their state. Clamor arose and they petitioned the gods for feathers. In time the gods sent word that the plumage was ready for delivery. Valiantly the vulture volunteered to go and get it. Entranced with the gorgeous display, he recklessly chose the gaudiest display for himself. Alas, the gay plumage hampered his flight. Humbly he changed to the plainest garb, and so soared unfettered.

In 1925 Bolivia issued a postage stamp (shown enlarged) celebrating its one hundredth anniversary as a republic. On it is a somewhat conventional picture of the mighty South American condor, perched on a lofty peak and looking off towards the boundless ocean. Beside it are the words *Hacia el Mar,* Towards the Sea. Surely, it is a picture symbolic of freedom.

This is the giant vulture of the Andes, with a range that extends from Ecuador south to the Rio Negro in Patagonia. It is about the size of our own California condor, with a wing spread of nine to eleven feet from tip to tip. In color it is black with a glistening bluish sheen. Its naked neck wears a white ruffed collar. Like the other birds of this class, these condors are masters of flight. Darwin relates that he watched a company of these birds in the Andes for half an hour. "They moved in large curves, sweeping in circles descending and ascending, without giving a single flap."

As with all vultures, these great birds are primarily eaters of carrion, but sometimes they carry off young lambs, calves and goats from the flocks of the mountain herdsmen.

The Andean condor lays two white eggs on a projecting shelf of a lofty ledge. The young remain in the nest for several months before they are able to fly and seek their own food.

No more pathetic sight is to be seen than the dejected specimens kept caged in zoos. They belong on the loftiest peaks, free to soar into the solitudes of measureless space, rather than to suffer the indignity of iron bars.

FRASHERS PHOTOS, POMONA, CAL.

THE ARISTOCRAT OF SQUIRRELDOM—THE KAIBAB SQUIRREL

Except for the characteristic white tail and black underparts, this inhabitant of the Kaibab National Forest of northern Arizona resembles his cousin, the Abert squirrel. Scientists are unable to explain the reasons for its distinctive coloration. This beautiful squirrel affords one of the most remarkable instances known of a widely differing variant occupying a restricted area near that of the ancestral form

Calling on the Kaibab Squirrel

By EUGENE S. McCARTNEY

EARLY in December of 1934 a beautiful Michigan fox squirrel, made resourceful or desperate by hunger, climbed a tree beside Angell Hall on the University of Michigan campus, crossed the roof, ran along a cornice, passed through a drain, and entered the light well in front of my office on the fourth floor. When it returned on succeeding days there awaited it on the window ledge bountiful offerings of nuts. These induced it to continue as daily routine the visits that it had started as foraging expeditions. Since that time many other squirrels have come to my window, sometimes as many as eight or ten in a day. My bushy-tailed friends have worn well, and I have shared their joys and sorrows.

My two-year friendship with the fox squirrels made me squirrel-minded, so that, when I went west last summer on my vacation, I decided to see what other squirrels were wearing and doing, and to find out whether mine were keeping up with the Joneses of squirreldom elsewhere.

In many of our national parks in the West squirrels that live within easy cruising distance of cabins and hotels have been so tamed by tourists that they take nuts from the hand, and some nose their way into pockets and climb over one. Peanuts, patience, and passivity are the prime prerequisites in establishing an *entente cordiale,* but winning the trust of squirrels becomes far easier wherever they are so numerous that they can be made to compete for largess. The boldness of one encourages the others, so that hungry stomachs and gathering confidence soon bring them scampering about the philanthropist. Their exultation over the seizing of a choice nut and the making of a successful getaway seems to be not a whit less than that of their benefactor in luring them to him.

In the summer of 1936 I had in my hands and on my lap many Douglas squirrels, California gray squirrels, golden-mantled ground squirrels, and brown-mantled ground squirrels, as well as chipmunks, but none of the self-minded white-tailed Kaibab squirrels. They are not so numerous as are the other species, and hence one does not have opportunity to work on their mob psychology, but two beautiful specimens that I saw in a huge cage were always looking for a handout from tourists.

The Kaibab squirrel is the most famous and the most aristocratic of the several species of squirrels upon which I have called. It makes its home in that part of the Kaibab National Forest that is north of the Grand Canyon.

Next to the Canyon itself it is, in my opinion, the most distinctive thing in the park, although the Kaibab deer is by far the most popular animal.

This squirrel has a chestnut-brown patch on the back, which is otherwise a dark gray. The under parts are black. It wears white buskins (or appears to do so) and has a characteristic white tail, and large upstanding ears.

Tourists are satisfied to get a passing glimpse of the Kaibab squirrel scurrying to cover without realizing that its history is far more interesting than the animal itself. It has the same pedigree as the Abert squirrel, a species that inhabits the region south of the Canyon. A scientific work describes it as follows: "A large squirrel with large bushy tail, dense fur and long ears with long terminal tufts in winter. In summer fur short and harsh and ear tufts wanting. Color dark gray with chestnut brown on back, ear tufts and stripes along each side black; lower parts and lower surface of tail white." Whatever differences there are between the two species must have been acquired since the patient, unwearying waters began to separate members of the common ancestral species, brother from brother and father from son. Scientists are not in agreement in trying to account for the whiteness of the tail of the Kaibab squirrel, but, whatever its purpose may be, it provides the summer tourist with a helpful means of spotting its owner.

Many travelers catch sight of one or more white tails while riding through the Kaibab Forest to the Canyon. No squirrels seemed to be roaming about, however, during the rainy afternoon when I was passing through this forest, but at Jacob Lake Inn, forty miles from the Canyon, I saw two in captivity in an enormous cage that encircled five dead pine trees, without covering them. They are handsome squirrels and doubtless are the most photographed rodents in the nation, since amateur photographers, preferring the personal touch to the superlatively good cheap pictures on sale at the Inn, snap them many times a day during the tourist season. These two squirrels (or their predecessors) appear in a moving picture shown nightly to summer tourists at the Canyon.

Seeing a squirrel in a cage, even a capacious one, is not, however, the same as calling on one at home. I had to see one in its habitat. I spent the better part of a day in a fruitless effort to do so. The next day, after two hours of equally vain searching, I sat down weary, with my back against a tree. Scarcely had I done so when I saw a white tail frisking less than fifty feet away. A young squirrel was gathering pine needles and grass. When it had secured a mouthful it ran up the other side of the very tree against which I was resting and carried its load to a nest above my head!

From a more distant vantage point I watched this squirrel for more than an hour. It seemed strange to me (as it did to a ranger to whom I spoke later) that a young squirrel should be working on a nest on August 4. The outer framework of the nest may possibly have been old, but the squirrel carried up many mouthfuls of fine material while I was watching it. I could not see the operation of lining the nest. If the squirrel lined the

FRASHERS PHOTOS. POMONA. CAL.

JUST LIKE THE REST OF THEM

Perhaps he is the aristocrat of the squirrel family, but we notice he does not turn up his nose when offered a lowly peanut

nest at once it did so very quickly, for it was on the ground again in from sixty to a hundred seconds. It was working "on its own," and I do not know whether it was male or female. Almost all the material consisted of pine needles. The squirrel was a most amusing sight when it had stuffed its mouth with all it could hold. It seemed to be wearing desiccated shocks of whiskers that needed trimming and thinning, as well as reinvigoration. Whatever grass it required it pulled up roots and all, a thing the Government would not permit me to do.

On descending from one trip the squirrel found a sprinkling of peanuts awaiting it, but showed no astonishment that such nuts had dropped from a pine tree. It ate what it wanted and resumed work, although it kept driving away a hungry brown-mantled ground squirrel and a chipmunk. Squirrels of other species would have hoarded the remainder. According to a notice on the cage at Jacob Lake Inn, the Kaibab squirrel does not store up food. Whatever one may think of its improvidence one must admire its self-assurance and its independence.

Hemmed in as the white-tailed squirrel is by the Grand Canyon and the deserts surrounding the Kaibab National Forest, it has no chance to extend either its range or its sphere of influence. Its habitat is as fixed as the mountain of Mahomet, and one who wishes to see it must journey to it.

I did not permit the fascination of the Kaibab squirrel to blind me to the countless alluring vistas carved out by the greatest rodent in the world, the Colorado River. Tireless and resolute, it spent ages in gnawing its way through strata of varying thickness and hardness, and it is now biting into the tough Archean rocks in the depths of the Canyon. Convention dictated that I gasp only at the handiwork of Nature in the Canyon, but her craftsmanship in the squirrel may be even more obscure.

What do you think of the private "zoos" set up to attract business to some filling station or hot dog stand? Are they justified in the name of humanity? Are conditions under which the bear at the right is forced to live, for example, in accord with civilization today? Can we point with scorn at some old world countries where treatment of dumb animals is still vicious and cruel and yet tolerate these roadside menageries? In the article that starts below we have food for both serious thought and remedial action.

PHOTOGRAPH BY WILLIAM L. FINLEY

Roadside Menageries

By ALICE KENNEDY GILLHAM

THE PRACTICE of keeping wild animals in captivity along the roadside for the purpose of attracting business from passing tourists apparently is on the increase. "Roadside menageries" is a fairly descriptive term for this type of advertising, which caters to the curious, thrill-seeking horde of travellers capable of attraction by such displays.

Everyone has seen examples of these roadside menageries: bears chained to posts, eagles in small cages, deer tied by the neck with ropes, and many other instances of wild creatures confined in close, unnatural quarters under insanitary, unhealthful conditions that make life merely a long period of physical torture and mental anguish.

Animals kept in well-regulated zoological gardens may be in better circumstances than those that roam the wilds under natural conditions. They are well fed, in clean comfortable quarters, sheltered from their enemies and nearly always well protected from insect pests and parasites.

In most roadside menageries, however, the opposite is true. The animals lead a miserable, dejected life to which death comes as a merciful release. Many examples can be cited, but a few will serve.

In a certain place in Montana a bear cub was kept chained to a woven wire fence, exposed all day to the sun and the attacks of dogs, flies and mosquitoes. Tourists periodically fed him candy, peanuts, chewing gum, cigarettes and other trash unfit for a bear or anything else. At other times he was neglected and underfed. His drinking water was placed in a dirty pan that he nearly always upset as soon as it was filled. Children, and grown-ups too, liked to tease this bear because he was always cross. The half-circle of ground upon which he lived, limited by the length of his chain, was worn deep with his continual pacing up and down. From all appearances the ground was never cleaned. In some manner, unknown to the manager of the country store who owned the bear, his collar became undone one night and he escaped from his confinement, never to be seen again.

In one California town, the owner of a lunch room, beer stand, service station and store has two raccoons and a bobcat to attract customers. The animals are kept in cages, arranged one above the other, and are cleaned only by hosing. When that is done the refuse washes from the upper cage to the lower ones. The screen sides offer the only protection from people or the elements, and even the keeper teases the animals. The unfitness of this man to hold any creature in captivity is further demonstrated by the fact that the eight opossums that he kept during the summer were dead by the end of September. At another place in California the owner of a lunch room has in confinement a bear, a raccoon, a few rattlesnakes, and a skunk. Here too, the conditions are undesirable and the animals are tormented by tourists.

On the other hand, there is one man, also a service station operator, who has as an attraction two bobcats, a raccoon and a number of birds. The animals have shelters in their pens and the owner feeds and waters his charges twice each day and cleans the cages and grounds each morning. His particular and thorough care of them is reflected in their excellent condition. If all owners of such menageries were as humane as he the problem would not be such a serious one.

Unfortunately, however, it is more common to see wild animals confined in insanitary, cramped quarters, at the mercy of the elements and the unthinking public. Badgers and raccoons are, perhaps, the most common of all wild animals kept in roadside menageries, although another common sight along the highways is a young fawn, tethered by the neck or kept in a small pen.

Imagine the mental and physical anguish of these wild

creatures of the forest imprisoned in this manner. One of the worst offenses is to keep bald or golden eagles in small cages that permit no physical exercise whatsoever. A creature that naturally spends the greater part of its life soaring in the clouds is brought to earth to a lingering, miserable death for the sole purpose of cheap advertising, catering to thoughtless people. This is cruelty to animals in one of its most vicious forms.

A dead coyote was brought to the laboratory from one of these roadside menageries not long ago for a post mortem examination to determine the cause of death. Its neck was worn bare by the chain with which it was tied. Its teeth were worn down to the gums from biting on the metal chain in its efforts to free itself. In its stomach were found such foreign materials as pebbles, bits of rubber from an inner tube, bits of leather strap, long, sharp, pointed bones from pork chops, bones from fish and fowl and other equally indigestible stuff. The startling find, however, was a web belt, the kind worn by soldiers during the World War, about three feet long, the buckle end of which was still in the animal's stomach while the other end protruded from the lower end of the intestine. The agony of this animal with its eight or ten feet of intestines telescoped along three feet of rough web belting is too horrible to think about. Evidently it had become so hungry that it ate everything handed to it, and some people thought it funny to watch it eat bits of rubber, sharp bones, stones and even the belt.

In addition to the physical pain these animals endure, there is keen mental torture for most species. Wild creatures are intelligent; they must reason or die. Some animals have more intelligence than some men; some have far better morals, and others are more sensitive to mistreatment. They are not mere creatures of meat, bone and skin; they have a brain too, and a highly organized nervous system.

Another phase of this private menagerie problem is that of injury by the wild animals to children and sometimes adults. There have recently appeared editorials in several newspapers in different parts of the country featuring attacks upon children by animals held captive in service stations and tourist resorts.

In one case the attack was on a small child by a "tame" puma that was kept chained in a service station. The baby was mauled by the puma and the newspapers devoted their space to the injuries she received. Little was said about the mountain lion, nor was there any condemnation of the owner of the animal for keeping it under conditions that made such an attack possible.

The other case resulted in the deaths of two men and the execution of the animal, a bear which had been kept in captivity for eleven years. It is impossible to ascertain from the newspaper accounts of the incident what the general conditions of the captivity were, but it was said that this bear had for that number of years "accepted" the petting of children and adults. Unfortunately we are not told what other kinds of treatment the bear had "accepted" during all those years. One morning when the owner took the bear's breakfast into the pen where she

PHOTOGRAPH BY JAMES GEROW

A TYPICAL ROADSIDE AVIARY

A restricted cage set in the glaring sun, untended and bereft of any comfort for a bird save a perch

was confined the animal attacked him, pursued him as he fled toward his car, struck him down, then turned on his helper who had come to the man's assistance. She killed them both, and was shot as she stood over her victims.

In cases like this, unthinking people immediately place the blame on the wild animal, when in fact the responsibility for all injury done by them should be placed squarely on the shoulders of the person who is responsible for keeping them chained or confined in such miserable circumstances that they are sullen, morose and ready to attack anything that comes within reach. Few wild animals are dangerous in their natural surroundings, but in captivity there must be constant vigilance on the part of their keepers. This is true even when they are given the best of care, and how much more necessary it is in the average roadside menagerie.

All animals have certain rights that every human being is honor-bound to respect. Among these may be mentioned the rights of wild animals held in captivity. Man has no right to oppress them, or maltreat them, any more than the Government has the right to oppress and maltreat its citizens. No one has a moral right to keep wild animals in uncomfortable or unhappy cap-

tivity. They have no right to keep them in cruelly small quarters, under either too much light or in darkness, in unclean places surrounded by bad odors, or to force them to subsist on unsuitable food. No one has a right to keep old, diseased or crippled specimens in captivity. It is much better to kill such as these and put an end to their misery.

Every keeper or owner of a roadside menagerie who through indolence, ignorance or cruelty permits a wild creature in his charge to suffer or die of hunger or thirst, of exposure to heat or cold, or any other preventable cause, is guilty of a crime and should be punished. His guilt is equally as great if he makes inadequate provision for the safety of the public from animals which might become dangerous, no matter how tame they seem to be, and, in turn, fails to protect the animals from unwelcome attention by the public.

It is gratifying to note that one state, at least, has passed a strict law regulating the keeping of animals, wild by nature, on or near any highway, for the purpose of attracting trade. The act also forbids cruel, improper and inhumane treatment of such animals, protects the public from injury thereby and provides for the granting of permits for roadside menageries and for proper inspection of the same thereafter, through powers and duties imposed upon the Board of Game Commissioners. This law is in force in Pennsylvania. There is no reason why every other state should not have a law that would accomplish the same purpose.

The Pennsylvania law represents one solution of this problem. The other alternative is complete abolition of the roadside menageries by law. It is true that under proper supervision and intelligent direction these private zoos may serve in a small way to acquaint the public with animal life. But it is the duty of every thinking citizen to see that the privilege of keeping wild animals in captivity is not abused. As long as there are thoughtless, cruel people who consider their profit above the welfare of helpless animals there must be a method of control. Public sentiment will determine the degree of this control, and whether it shall be regulation or abolition. It is time, however, that public sentiment demanded action.

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The Frog and the Rose

By HUGO H. SCHRODER

TREE frogs spend most of the daylight hours resting in some place of concealment. In Florida the common green ones are frequently found in tillandsias, so numerous in the central and southern parts of the state. In these air plants, cousins to the pineapple, I have found many of these small frogs hiding in the reservoir of water that accumulates at the base of the leaves.

At times the frog seems to have an eye for beauty when he chooses his daylight sleeping quarters. I found such an instance when spending the day with a Nature loving friend in Ft. Myers, Florida. A great profusion of flowers grew in his garden, ranging from the ordinary run of flowers to rare tropical plants, including a number of Florida orchids brought in from the wilds.

I discovered a number of tree frogs asleep in several of these flowering plants. The most unusual find was in the rose garden, where a green tree frog had selected a beautiful "red radiance" rose in which to take his daily nap. In seeking a safe hideaway, he had crawled between the petals of the flower, causing one of them to sag down.

I found him in his bed of beauty quite early in the morning and watched him at various times during the day. The color contrast between the green frog and the red rose made me wish for a color plate for my camera, but I had to be satisfied with an ordinary black and white photograph of this extraordinary color combination.

In the late afternoon the frog was in the same position as when first seen many hours before. When the setting sun disappeared in the western sky he left his beautiful surroundings. His sleeping period was over and his night of activity was beginning. Soon his voice joined with the voices of his fellows for the regular evening concert.

TRAVEL BROADENS ONE, OR SO THE ROBINS BELIEVED

Unperturbed that baggage car No. 6142 had a regular run to make, a pair of ambitious robins, despite interruptions, succeeded in building their nest and raising four youngsters on the brake rods

Robin Rod-Riders

By A. B. BROOKS

Like other birds, robins prefer a certain type of nesting site, but now and then a pair breaks through the instinctive barriers and selects something different. It was so with the "rod-riders".

This brave pair of robins started building a nest on the rods underneath a baggage car belonging to the "Blue Goose" train, which makes a daily run of seventeen miles and return from Buckhannon to Tygarts Junction, West Virginia. One of the trainmen, while making an inspection, found the nest and reported it to others. From the very first the railroad offered discouragements to the nest-building. At 1:15, on the afternoon following the beginning of the nest, the gasoline-driven motor coach hooked on to the baggage car, with the partially-built home, and pulled away toward the Junction.

If there was any disappointment to the birds in seeing their newly-found home move off it was short-lived. At 2:50 the car was back and the work of nest-building went on. The next day, and following days, the regular trip was made. Apparently Mr. and Mrs. Robin had no complaint to make with the schedule for they continued with the work until the home was built, taking their rest period in the early afternoons while the train was on its run.

In due time four eggs were laid in the nest and daily went on their journey over the none-too-smooth right-of-way. When the air was chilly Mrs. Robin rode along, and when days were warm she just loafed around the yards for a short rest from her duties. Sometimes the car would be placed in one spot and sometimes in another, but she was always able to find baggage car No. 6142. When the train was a little late in returning Mrs. Robin would fly out to the edge of the yards, alight on top of this car, and ride along until it was placed.

The little robins were hatched, and, until they were ready to travel under their own power, the parent birds gave them their noonday meal and gathered more food while they were off for their afternoon ride. Promptly at 2:50 the parents were back in the yards with their beaks full of worms to drop into the hungry mouths. If the train was a few minutes late they fretted about and seemed to look at each other anxiously.

But they really had little cause for anxiety. Their little ones had the protection of four foster parents. Capt. W. F. Miles, veteran conductor, who was ever alert to bring the "Blue Goose" in on the dot; the engineer who eased the train over the rough places; the brakeman who applied the brakes with a delicate hand and coupled on the baggage car as though it were a baby's crib. Finally, Charlie Hoffman, who has been shifting cars in the local yards for the past thirty years, shifted No. 6142 with as much care as he would the president's private car. As a result the young birds all safely left the nest without misadventure, much to the B. and O's relief.

A WORK OF ART

This tiny back-yard plot, bounded by fences, garages and an alley, was made into a beautiful garden simply by following a few simple rules of balance and perspective

Photographs from annual garden contest, Women's Civic League, Baltimore, Maryland

Making a Small Garden Look Larger

By MARIE EISENBRANDT

As happened with many another family during the late financial embarrassment, we were forced to move from our country home with its large, spacious garden to a small city house with no garden at all—merely a small, rectangular back-yard plot containing a few patches of grass, two straggly rose bushes and a whitewashed garage!

At first I looked in despair at what should have been my garden. Then, slowly, gradually, as with any garden fanatic, I saw its possibilities. Somehow, being the person I am, I would have to grow things in that small space. And I would have to grow them in such a way that the dreary dump before me would become cool, green loveliness, inviting one to stop and linger and note a flower or two.

Near a house, no arrangement of flowers is more attractive than a formal garden, since the house itself is an artificial man-made creation, usually unsuited to Nature in the raw. And this particular garden was close, all too close to the house! But it was also much too small for a strictly formal treatment. A semi-formal arrangement was obviously the best for it.

Before a spade was touched to the earth or a seed bought, paper and pencil were called into assistance. Somehow that garden had to be made to look larger than it really was. Small rooms can be made to appear larger, why not a small garden? It was a long narrow garden. It would remain long and narrow to emphasize the perspective. And there would be no center flower beds to break its lines. As with the furniture in a small room, flowers and shrubs in correct proportion to the garden would have to be used. Regretfully but ruthlessly a beloved lilac bush was tabooed, likewise the colorful barberry. A color scheme helps with a room. It will with a garden too. Pale light colors always give a greater impression of space than do brilliant dark ones. Flowers

BACK-YARD BEAUTY

Any plot of ground, regardless of its small size, can be turned into a beauty spot that will be the envy of your neighbors. In this case, the owner surrounded her tiny bit of lawn with charming border plants

IF FLOWERS WON'T GROW, TRY A WALK

This wise gardener, unable to make plants flourish where underground pipes came close to the surface, built a walk with a bird bath terminus over them. To make it appear larger, the small, square garden was planted with low flower borders of equal height

in all the varying shades of pink, orchid, lavender and maize were decided upon, and that glaring white garage was painted a lovely apricot-cream color.

Vistas and mirrors are also utilized in making a room look larger. Fortunately the garden offered pleasing vistas into neighboring gardens but mirrors were certainly out. Water, however, has powers of reflection, so the wall of the garage at the rear of the garden was planted with pink hollyhocks growing in an arc and a low pedestaled bird bath was placed below them, in the center of the arc, where it caught the reflection of the hollyhock blossoms.

Nothing makes a small room look smaller than crowding it with furniture. There must be some empty space. The small garden needs empty space too—planted with grass for wandering about.

For the gardener to reserve this empty space is the hardest part in planning a small garden. There are so many lovely blooms that must be eliminated, beginning with all the high trees and the large bulky bushes. Yet it was just this heartless elimination that left the center of the garden to be planted with grass—a thick green carpet that begged to be stepped upon and helped to focus the attention on the bird bath at the end.

No paths, no bushes and no flower beds were allowed to break the unity of this center lawn. For here was the one opportunity for spaciousness that small garden afforded. Although paths were eliminated, low bushes and flowers were planted along both sides of the garden. The gaily-colored flowers were placed close to the house, since colors fade as they recede, and having the paler shades at the end of the garden helped to give an impression of distance.

The same rule applied to height. The higher flowers and plants were all placed close to the house, the low-growing ones close to the bird bath, for vertical lines also seem closer to the earth when viewed from a distance.

Fortunately, the garden sloped slightly upward near the farther end. This also increased the apparent length of the back-yard when one looked out into the garden from the rear porch of the house, the place from which it was most often seen. Had the slope not been there, a low terrace at the end of the garden would have had the same desirable effect.

Every kind of flower that does not attain too great a height was used, including even the perennial aster. Roses, lilies, chrysanthemums, snapdragons, phlox, mountain laurel, peonies, petunias, begonias, daisies, tulips, jonquils, azaleas, narcissus, gladiolus, flags and delphiniums served as a background, while borders were formed of verbenas, candytuft, hyacinths, pansies, violets, and lilies of the valley, thus eliminating the sedate box border of the more formal garden.

When the actual planting began I had to be quite firm with friends and neighbors who insisted on giving me garden cast-offs I did not want. Refusing graciously was often a problem, but I knew what my garden could accommodate and what it could not. One enthusiastic orchardist actually presented me with a young apple tree that in a few years would have usurped half of all my available space.

In self defense I pointed out other small gardens where the owners had stuck to my rules. There was an exceedingly long side garden in the city, a garden too long for its width, whose length had been broken by two rectangular flower beds and a pool of irregular shape surrounded by a rock garden. In another, a small suburban garden at the rear of a low white bungalow, a large weeping willow, beautiful in itself but out of proportion to the garden, was present one year, but ruthlessly removed the next.

In our own neighborhood was a small square garden that, because of pipes too close to the surface of the ground, had a barren patch half way down its center where nothing would grow. So the patch was turned into a path leading to a bird bath surrounded by great clumps of French marigolds. Here, since the garden was square, low flower borders of equal height surrounded it, with the heaviest planting, mostly clinging vines, close to the house.

The problem presented by (Continued on page 316)

Bird Vespers of Saint Michel

Evensong takes on a new meaning when heard on France's abbey isle

By ROSALIE EDGE

BIRD-LOVERS have this advantage over the rest of mankind—that wherever they may be, they are sensitive to the presence of any bird that comes to relieve the tedium of the dullest moment, or the sordidness of the ugliest place. An hour's waiting at a ferry-slip may be an opportunity for the fascinated observance of gulls and terns. A flat tire may prove to be the (disguised) providence that reveals a rare warbler. Best of all, the joy of birds may crown some rare experience, and set it apart, forever a sacred memory. This was our experience on our last visit to Mont-Saint-Michel.

MONT-SAINT-MICHEL, A MASTERPIECE OF GOTHIC ART, UNIQUELY SITUATED

We had been more than once before to the wonder-rock of Normandy, and had climbed its heights, rubbing shoulders with hundreds of tourists. Only so can one explore the great halls and chambers that underlie and support the Marvel, ascend to the exquisite abbey church built on the very pinnacle of the rock, or see on the tip of the flèche, against the high clouds, the winged Michel lightly poised for heavenward flight.

We passed through the arched gateway to within the walls of the little spiral city, and looked back at the causeway where stood almost a hundred great chars-à-bancs that had discharged a multitude of tourists into the corkscrew street. With the crowd of sightseers, we slowly climbed the steep ascent of the ramparts. We passed the gay souvenir shops with their protruding stalls of pottery, and racks of picture postcards. We looked into the many restaurants, all crowded, and threaded our way among the tables that overflowed into the street. Every inch of the rock seemed as alive with human beings as an anthill with ants; nothing was farther from our conscious minds than the thought that in this place swarming with tourists any bird would have the temerity to make its home.

THE MILE-LONG SHADOW OF THE ROCK CROWNED WITH CHURCH AND SPIRE

Led by the voluble guide, we streamed like a school of fishes through the abbey buildings. Like swarming salmon atavistically impelled ever upward and onward, we mounted the Stair of the Abyss, and swept on from cellars to offices, through the two great halls, and up to the lovely cloister and the majestic church. We wished we might linger in contemplation of this masterpiece of Gothic, uniquely situated, and one of the most exquisite buildings in all the world. But the eye of a French guide, like the eye of the Lord, is in every place, and any laggard is viewed with suspicion. So we all poured out as we had poured in—in mass formation.

Ah! but once outside we were free, for it was our good fortune to be staying the night at Mont-St.-Michel. With great iron keys, the guide locked the doors of the church, and like a sheep-dog herded the dumb and shorn tourists each to his own seat in the waiting char-à-bancs, for this

was the last tour of the day. We were left almost alone on the summit of the rock, and almost instantly were at peace with ourselves and all the world. Our nerves rested on the stillness as weary feet on moss.

We wandered slowly down the curving rampart street. All tourist trade had vanished, and the little, perpendicular city was given over to home life. Smoke curled from the chimneys, and the voices of children echoed among the many walls. Through the uncurtained windows, we could see the home-loving French people gathered around the big tureen in which steamed the soup-of-the-good-woman. We perched ourselves on the rampart wall, and looked into the little gardens, the existence of which we had not before suspected.

The sun was low; the far-retreated sea was scarcely visible; for miles on every side stretched the wet and gleaming sands. The wind blew fresh and pungent on rock and chiselled stone, carrying the salt tang that so stirs the restless longing of migrant birds and men. Gulls flew over, and we identified four species. Tiny specks moved on the sands far below, and with our glasses we saw that they were redshanks—tattlers like our yellowlegs, but with red stockings.

THE WINGED MICHEL LIGHTLY POISED FOR HEAVENWARD FLIGHT

Suddenly, the clear whistle of a blackbird severed the stillness. The air quivered with the stroke. Were we dreaming? Amazed we stared about us, and felt somehow reassured at the sight of a little French "English sparrow" gathering crumbs at our feet. We felt kinship with him, and hoped he did not know of our snobbish rudeness to members of his clan who are naturalized citizens of the United States. Again the blackbird called, like the first flute of an overture, and was answered by one and another of those bright-colored and musicianly finches that sing madrigals in English gardens. The voices of other birds took up the round, a happy avian chorus, and our hearts sang with them:

"The spring is come, I hear the birds
"That sing from bush to bush.
"Hark! Hark! I hear them sing!
"The linnet and the little wren,
"The blackbird and the thrush."

Then the instinct of the ornithologist rose dominant within us, and with prying glasses we peered into the recesses of the little gardens, and identified the singers. Our choir was composed of four finch-sopranos, goldfinch, chaffinch, greenfinch and bullfinch. They were well supported by the mezzo and contralto of the linnet and the yellowhammer, the blackcap and the black redstart. The blackbird whistled his clear obbligato, and the monotonous chirps of the housefinches marked the rhythm. Two wagtails moved dignifiedly to and fro across a tiny lawn, one in black and white, the other in black and yellow, their long tails sweeping behind them. They appeared to feel responsible for the music though they did not join in it, and we named them the choirmaster and the conductor.

We counted twenty-two species of birds in all, though doubtless there are others that nightly sing the vespers of Saint Michel—but we had not time to find them. It was already late evening. Far across the sands the sun flung the mile-long shadow of the rock with its crown of church and spire, and all too soon this was overlaid with the night shadows that now ran swiftly from shore to shore. The darkness scaled the rock, leaping from wall to wall. The sun's last flame shot upward to light the flèche and, dying, etched it, a torch extinguished, against the cold green of the sky. The sea came charging home, white manes flying, and rose protectingly around the base of the rock, chanting its antiphony. The birds closed their evensong with twittering, sleepy amens. With only the stars exalted above him, all was peace beneath the outspread mighty wings of the Archangel.

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REVERIE

By ANNA MARY DICKSON

A steep and shad'wy hill
And then a lighted home,
A wild, wind-driven storm
And then a rainbowed dome,
A rough and choppy sea
Then calm—for those who roam.

A trackless stretch of forest growth
And then a path in sight,
A vast expanse of prairie land
And then the mountain's might,
A sunny strand in shadeless clime
And then the soft twilight.

MOSSES OF THE WOODS

Photographed by Devereux Butcher, Lumberville, Pennsylvania

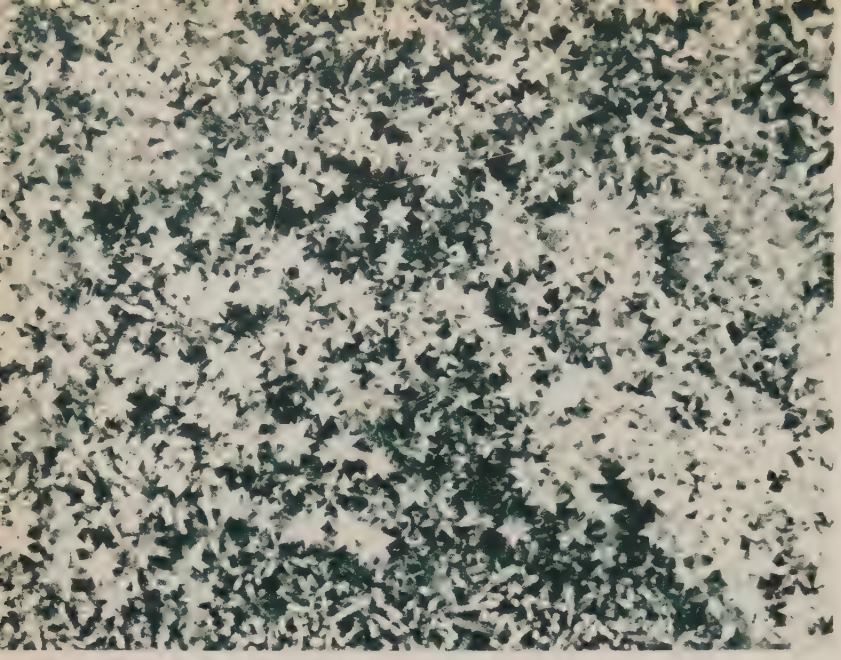
For beauty and delicacy of growth no plants surpass the mosses. As John Ruskin well wrote: "Meek creatures, the first mercy of the earth, veiling with hushed softness the dintless rocks. . . . They will not be gathered, like the flowers, for chaplet or love-token, but of these the wild bird will make its nest, and the wearied child his pillow."

Mosses are creatures of moisture, and one of their chief functions seems to be its holding for the service of others. Mosses absorb the rain and shield the ground beneath them; thus they prevent both flood and drought. They form seed beds for the trees of the forest and shelter the seedlings in their infancy. Mosses form the beds of infant birds and of the lordly moose.

First on this page is a species of fern moss, *Hylocomium*. Beneath these larger plants is a smaller species, *H. splendens* or *proliferum*. A little conifer has started in the mossy bed, and some day it may overtop the forest that now shelters it. *Hylocomium* is from the Greek and means "an inhabitant of the woods," and several of the species inhabit woods all over the northern hemisphere. It is here shown about one-half natural size.

Thuidium delicatulum is also called fern moss, as this illustration well shows. This plant is almost cosmopolitan in range and grows in intricate mats on the ground, on decaying wood, or over rocks in moist woods. It is bright green or yellow-green. This particular specimen was growing on a shaded rocky slope. About one-half natural size.

Mnium cuspidatum, which grows in this country from Newfoundland to Florida, and across the continent to the Pacific, also is an inhabitant of Europe and Asia. It is a common species, growing in moist shady places both in the woods and in more or less open spots. This group, shown here about natural size, was growing on a moist, shaded lawn and bore fruiting capsules.

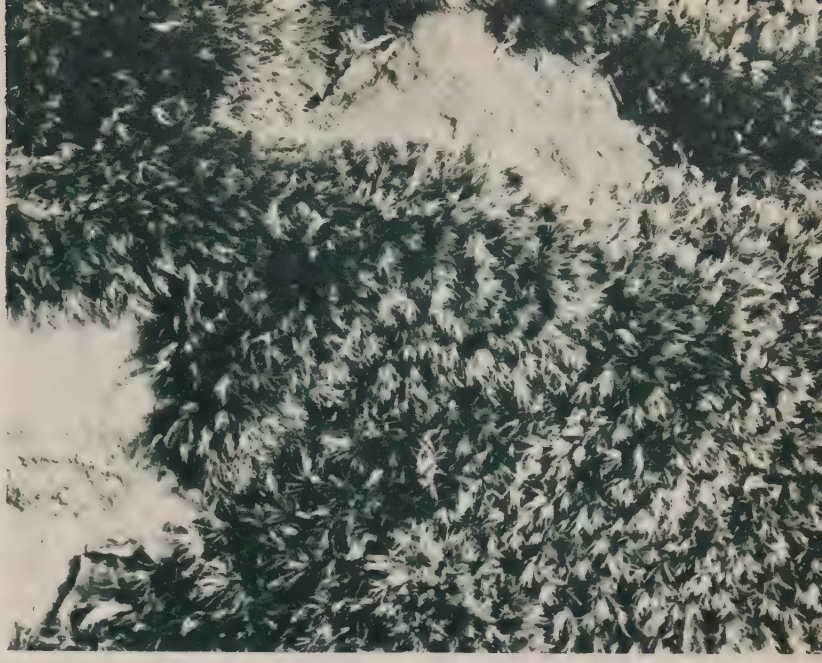


This is *Bryum bimum,* our commonest species of a genus that contains several hundred, most of them of very broad distribution. It generally grows on the ground or on rocks, and, rarely, on decaying wood. This particular mat was growing on a moist sloping rock beside a few plants of *Anomodon rostratus,* also a widely ranging moss. It is here shown slightly larger than natural size.

Bartramia pomiformis, apple moss, is widely distributed over the northern half of the United States, and northward to the Arctic. It is found also in parts of South America, Europe, Asia, Africa and New Zealand. It grows in yellowish-green mats in a variety of moist situations. The group here shown was growing on a shady wooded slope, and is here represented about natural size. *Bartramia* was named in honor of William Bartram, early American naturalist of Philadelphia. A genus of sandpipers bears the same name. The specific name *pomiformis,* apple-shaped, bestowed by the wise Linneaus, has allusion to the globular fruiting capsule, which looks like a tiny red-cheeked apple when green.

Leucobryum glaucum, commonly called pin-cushion moss, grows commonly throughout the United States and much of wooded Canada. It is known also in Europe, Asia and Africa. The name of the genus has reference to the light color of the plant, which, however, is light green rather than white. Most of the other species of this genus, few in number, are confined to the tropics. This group, here shown about one-half natural size, was growing in a comparatively dry location.

Dicranum scoparium, sometimes called broom moss, is our commonest species and is rather variable in characteristics. It grows in various situations, either dry or moist, on soil, rocks, or decaying wood. It fruits freely, maturing in August or September. It usually may be distinguished from related species by its relatively large size and the large leaves that are turned more or less to one side. The mat represented was growing on a dry rocky wooded slope. It is here shown somewhat less than natural size.



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Here is shown an unidentified species of sphagnum moss. The genus *Sphagnum,* comprising the peat mosses, with many species, is the type of a family and an order of mosses. Some species are almost cosmopolitan in range, but they are most numerous in the cooler parts of North America and Eurasia. They are among the more important of the plants that have converted the post-glacial lakes into dry ground. Economically, they are the most valuable of all the mosses. The peat of commerce, long the chief fuel of many Europeans and still so used to some extent, and the peat moss of the horticulturists, are largely composed of sphagnum moss. It has also been used widely in surgical dressing and is still the filling of the moss-bag in which thousands of children in the north—Indian, Eskimo and White—pass their infancy.

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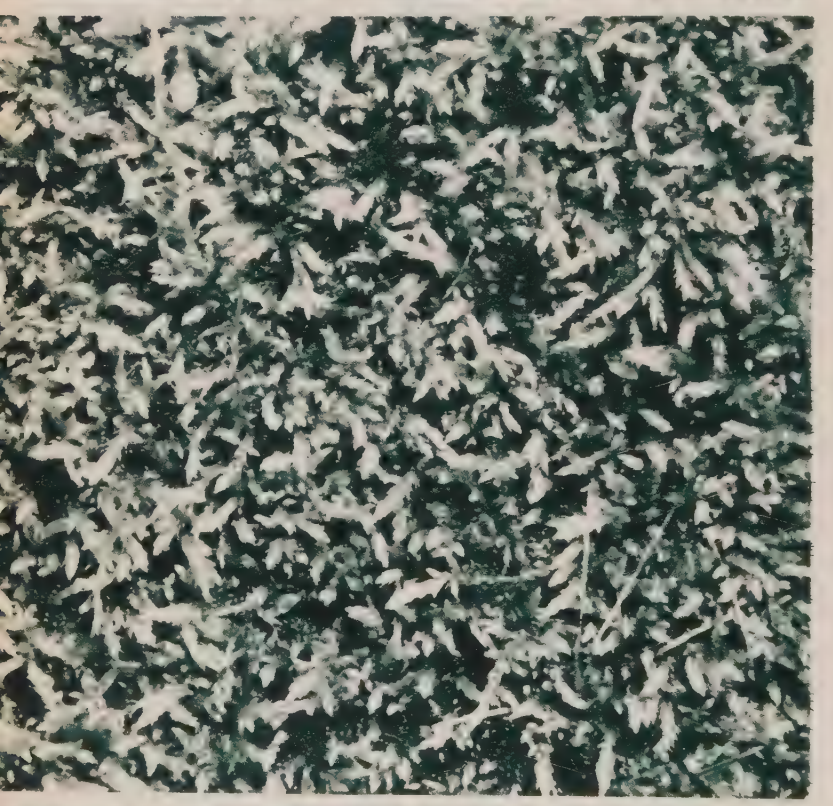
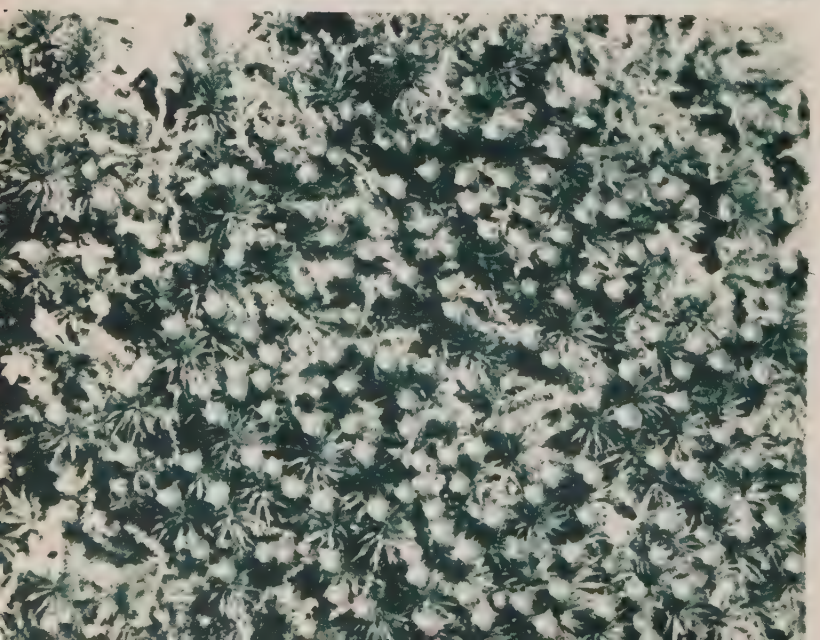
Polytrichum ohioense, one of the commoner of the species comprising the group usually referred to as hair-cup mosses, ranges from Newfoundland to Alaska, and south to Alabama, Missouri and Oregon. It is also found in Europe and probably in Asia. It grows in moist shady places, usually in woods. The plants here shown, about one-half natural size, have the fruiting capsules well developed.

Aulacomnium heterostichum, one of the two species that compose this genus, both being common, grows in the United States from the Atlantic Ocean to Wisconsin and Texas, and also occurs in Asia. One of the characters distinguishing the genus is the grooved fruiting capsule, and the name, derived from the Greek, furrowed moss, alludes to this peculiarity. *A. heterostichum* differs from its congener *A. palustre* in having broader leaves. *Aulacomnium* is the type of a family. The group here shown about natural size was growing at the base of a wet cliff, a typical situation.



This mat of an unidentified species of *Brachythecium* was grown on the wet vertical face of a rock ledge, a type of haunt often chosen by the members of this genus. It is here shown about natural size. There are many species, and they grow variously on earth, rocks, or trees, or even in streams. The stems lie prostrate, forming loose or dense mats. The generic name, derived from the Greek—short little vessel—, has allusion to the short fruiting capsule.



Catharinea undulata is wide-ranging, being found throughout temperate North America, and also in Europe, Asia, and Africa. In this group, here pictured less than natural size, only the female flowers appear; the male flowers are concealed at the bases of the leaves. This mat was growing on a rock on a shaded slope. The genus was named by the botanist Friedrich Ehrhart in honor of the Empress Catherine II of Russia.

GASPÉ SANCTUARY

By RUTH M. E. HENNIG

Looking three miles out to sea from Percé, on the Gaspé Peninsula, province of Quebec, Canada, we see beautiful Bonaventure Island, where thousands of sea birds find sanctuary. Huge black cliffs of conglomerate rise steeply from the restless, pounding sea. This rock, unlike most forms of pudding stone, contains agates, quartz and many brightly colored pebbles. The giant ogress that the inhabitants tell about mixed not only plums in her pudding, but raisins and apricots as well. There is one section of the island that this ancient cook could not stir with her pudding stick, however, and this remains as clear as limestone. The highest point of the island is Percé Rock, rising 288 feet above the Gulf. Winter storms continually change its contour, and great masses of debris lie at its base. Originally it had three or four arches, but now only one remains.

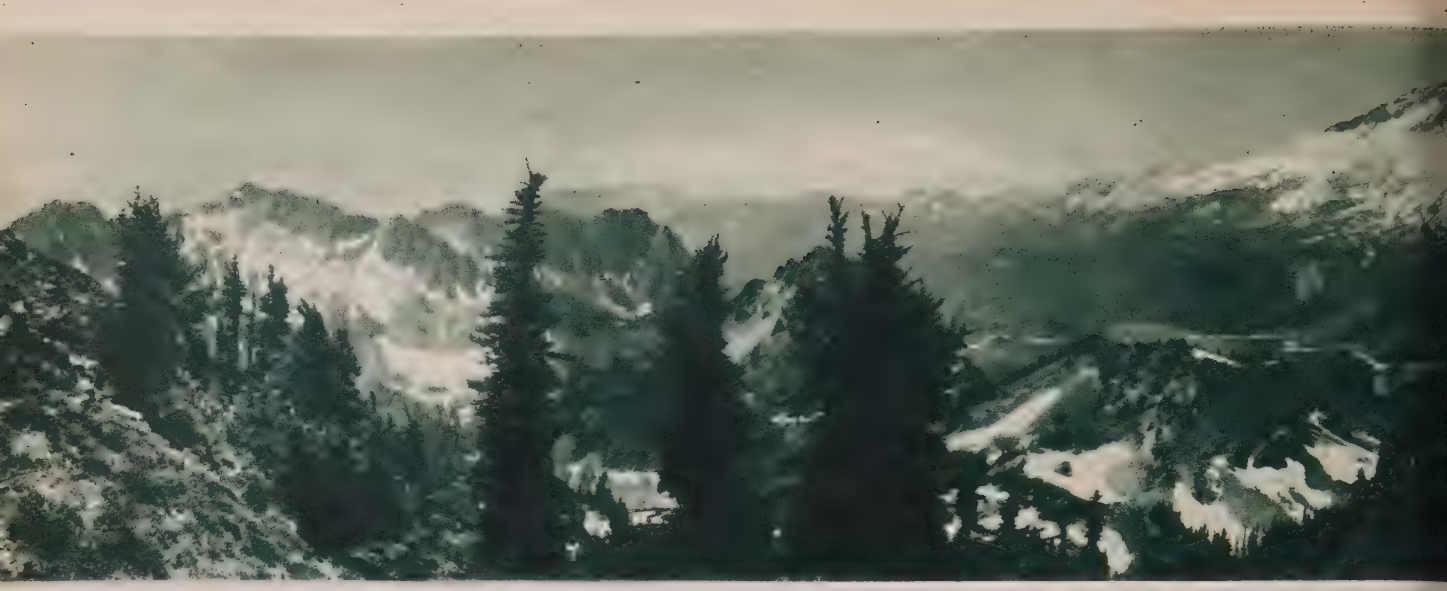
As we circled about the shore of the island, thousands of birds scattered and soared above us, wheeling about in the blue sky and then settling back on the rocks. The lonely islands are their breeding haunts and their nests are built on the open ledges and projecting cliffs. These birds are gannets, beautiful white creatures with black-tipped wings and a wash of yellow on their heads. We caught one picture of a proud mother gannet guarding her young. She was a courageous bird, as my scrambling over the rocks to set up my camera did not frighten her away. Her nest was built of sticks and seaweed. The male bird was away at the moment, probably fishing for his family. Their keen eyes can detect a fish many feet below the surface and at the right moment they drop into the waves for their prey.

Climbing cautiously, first over the slippery rocks covered with seaweed and then higher on the precipitous ledges, we came upon an exquisitely graceful mother kittiwake gull sitting on her nest of grasses and mosses. She was the most beautiful gull we had ever seen. These birds can sleep on the rolling waves of the Gulf. The gulls also are good providers, feeding their young on crustaceans, mollusks and small fish. Like all gulls, they are good scavengers and help keep the shores clean.

AMERICA'S WONDERLANDS

Photographs courtesy of the National Park Service

Vacation lands beckon in the month of May, the time of year when our morning mailbox is filled with all sorts of descriptive literature on where to go and what to see. The beautiful scenery of our National Parks draws thousands of tourists every year, and the pictures on this and the next two pages will give the prospective vacationer an idea of what he has missed if he has not seen outdoor America as exhibited in the peoples' parks. Above is Lake MacDonald, Glacier National Park, as photographed by T. J. Hileman. Less rugged beauty can be found in the parks of our eastern States. The peaceful scene below is The Tarn, Acadia National Park, Maine.



Mount Rainier's majestic summit, third highest in the United States, towers 14,408 feet into the clouds above Mount Rainier National Park. This photograph, copyright by Asahel Curtis, was taken from the top of Plummer Peak in the Tatoosh Range in mid-July, 1929. On the extreme left Eagle Peak rises above Longmire Springs, and on the extreme right, at the eastern end of the range, is Unicorn Peak. The jagged summit in the foreground to the right of Mount Rainier is Pinnacle Peak. One could stand on the spot occupied by the camera forever and not absorb all the beauty that is spread before the eye.

Ample evidence of the power of wind and water is shown in this view of the Grand Canyon taken from the

south rim at Mojave Point by George A. Grant. Thousands of years ago the Colorado River, seen far below winding its tortuous way between the canyon walls, ran level with the table top plateau in the distance. The relentless washing away of the rock and soil by the river, and the action of the wind and rain, have cut this enormous chasm into the face of the earth. As the sun sinks over the plateau at the close of day, the purples and reds of the canyon transform the scene into a picture no artist could copy.

Below is shown one of the many beautiful scenes in Rocky Mountain National Park, Colorado. Looking across Bear Lake in the foreground, we see Hallett Peak, snow-capped Flattop Mountain and Tyndall Glacier.

The Emergence of the Seventeen-Year Cicada

Since the middle of the seventeenth century this remarkable species has attracted the attention of observant people in many parts of eastern North America. Gradually it was learned that ordinarily its underground life lasts nearly seventeen years, at the close of which the pupae emerge, transform into the winged adults, mate, lay their eggs and die. There are more than twenty different broods, each with a range that may overlap others. Thus the species may occur in a given locality as many as three times in seventeen years. Furthermore, some southern broods complete their growth in thirteen years and the individual insects are usually smaller.

The individual here shown belonged to Brood X, which ranges from southern New England to Wisconsin and Illinois and in the Appalachian region to Tennessee and Georgia, the largest in extent of range and population. It came from an egg that was laid in a tiny furrow cut by the ovipositor of the mother in a twig in the summer of 1919. This egg soon hatched as a tiny grub-like creature that dropped to the ground and burrowed in. For seventeen years it delved in the earth, travelling about in its tunnels, and finding sustenance in the juices sucked from the roots of plants. It molted several times, transformed to a pupa, and in May, 1936, had become a grayish hump-backed creature about an inch and a quarter long. Then some instinct within commanded it to cease its delving and seek the light. On the next warm evening it sought the nearest tree that promised a secure perch for its great adventure. A longitudinal rent appeared in its back, and it emerged a creamy-white creature with bright red eyes.

Now the insect hangs clear of the chitinous covering

As photographed by Paul Knight near College Park, Maryland

that has served it so well. But the limp and helpless creature, with no protection but that of darkness, must have firm support until it gains strength. Usually its discarded shell hardens with its now nerveless claws holding firmly to the tree, and sometimes this serves as a perch. At other times, as in the present case, the weak insect crawls to some other nearby perch to complete the process that will enable it to mate and produce eggs for the continuance of the race. As it is spared the necessity of eating all its energies may now be directed to the task of reproduction. To seek its mate and to escape its numerous enemies its wings must be perfect, and the evolution of these from the stubby projections that first presented themselves is a most interesting process. By the gradual pressure of blood, the folded structure is expanded to form the perfect wing. At the same time the creamy-white color gradually darkens until the insect is nearly black.

At the base of the abdomen of the male cicada is developed a sound producing organ unique in its complexity. It comprises a pair of shell-like drums that are operated by powerful muscles and produces a shrill sound. As the numbers increase, the combined shrilling of thousands forms a sound that is audible for some distance.

As the cicadas fly to and fro in their mating quest, they are preyed upon by so many enemies—birds, insects and reptiles—that one wonders that any survive. But save where buildings or pavements bar the survivors of seventeen years ago, one can count on an abundant crop.

Brood XI, with a limited range in southern New England, is due to appear in May of this year.

A Few Notable Plants

Photographed by W. S. Hinegardner

There is magic in threes, and what child was not thrilled when his first trillium, with its three leaves and its flower parts in threes, was found in the spring woods? The purple trillium or wake-robin, ***Trillium erectum,*** although coming at a time when our robin has been awake and in evidence for some weeks, always is greeted with gladness. Although one may not approve of its scent, its bold beauty makes up for its odor, which, after all, may be attractive to some insects if not to us. This interesting group was found near New Haven, Connecticut.

Here is a type of plant that is "different"—a liverwort called ***Marchantia polymorpha.*** The parts that correspond to leaves are forked ribbon-like structures that bear root-like organs on the under side. Rising from the upper surface of the "leaf" are the parts that bear the male and female elements. The former are on little growths that have been compared to one-legged milking stools, and the female on what appear like tiny palms. By the union of these elements a plant is engendered that bears spores capable of producing the perfect plant. But the species is not dependent alone on this process for perpetuation. The branches of the ribbon may become new plants by the dying of the connecting part not needed; or certain little cup-like structures may bear what look like bulbs or eggs, and these will produce plants. Photographed near Amherst, Massachusetts.

The ram's head ladyslipper, *Cypripedium arietum,* has a range that extends from the upper Mackenzie in northern Canada southward to Manitoba, Ontario and Quebec, and along our northern border from Minnesota to New England. Yet one may roam its haunts for years without detecting it, since it is the rarest of our ladyslippers. It is also the smallest and is well hidden by its coloring, for the pink-lined dull white lip is concealed from above by the purplish-brown sepals. Pictures on this page were taken at Amherst, Massachusetts.

The common turtle-head, *Chelone glabra,* ranges from Newfoundland to Florida, and west to the Mississippi Valley. It loves moisture, and, given this, is content in a variety of situations, although it prefers shady places. Set off by the dark green leaves, set in pairs, the white or pinkish flowers whose form suggests the face of a reptile are decidedly attractive.

The downy rattlesnake plantain, *Peramium pubescens,* attracts the woods-walker at any time of year by its leaves of grayish-green with their silvery-white vein lines. In mid-summer one finds a spike of white or greenish flowers a few inches high. The flowers are not especially beautiful but are of great interest to botanists. Darwin considered that these plants represented a type of orchids, now nearly extinct, that was the ancestor of many of our orchid groups.

CASSIN'S VIREO

Photographed by H. D. Wheeler at Angwin, California

In the early summer of 1936 a pair of Cassin's vireos built their summer home in a small black oak not far from our house. The structure was the usual semi-pensile nest hung in a stout fork and embellished with bits of paper and clotted cobwebs. In it the female laid four spotted eggs. Gradually we gained the mother's confidence until we were able to get the accompanying portrait as she brooded the hopes of her heart. After the eggs were hatched, we watched the feeding process for several days. Every few minutes one or the other bird would bring a fly or caterpillar for the never satisfied brood.

Then came the great adventure of deserting the nest. We were fortunate enough to be present when this happened. Evidently the arrangement of the young along a convenient twig helped the mother to decide which eager youngster deserved to be fed next. Still, each one seemed to think that he should be given every offering, and expressed alternate elation and disappointment each time the mother appeared. Eventually, however, each developed the wing power to take its place in the vireo world.

BROWN PELICANS

As photographed on the Los Coronados Islands by Lewis Wayne Walker

The brown pelican, *Pelecanus occidentalis,* is an American bird, tropical and semi-tropical in range, that breeds on our Atlantic and Gulf coasts from South Carolina to Texas and southward to Brazil, and on the Pacific coast from southern California to Central and northern South America. The Pacific coast birds are sometimes separated as a subspecies.

The first four pictures present successive steps that are taken by this heavy bird as it alights on its nest after arriving from the fishing grounds with food for its young. The great bird has sailed in on set wings and in the first picture has taken the first position in checking its momentum; next, when close to the nest, it back-pedals, as it were, until almost still in the air; then it sets its wings at just the right angle to avoid dropping to earth, and alights gracefully on the edge of the nest. In the last picture, the great bird, after satisfying the hunger of its brood, takes off for another fishing trip.

It's dinner time in pelican land. On this page are shown the young in three stages of growth and in the act of obtaining the partially-digested food from the throat of the mother. The one shown in the last picture on the page is the youngest, perhaps a week from the egg. It is covered with white down and bears little resemblance to the dark brown adult. It is teasing its mother for a fish. The older bird at the top of the page has become used to this strange way of getting its dinner and has learned to balance itself with its broad wings as it searches the depths for its pre-digested food.

Here also is shown a couple of young birds that have been growing wiser for several weeks, and are beginning to take on the characteristic attitude and solemn look of the adult. The downy plumage of the nestlings has been changed for one that gives promise of the rather handsome plumage of the full-fledged adult, when they will sport a white head with a yellow-tinged crown, and a rich chestnut-brown neck and brown and grayish body. One of the first breeding reservations established in the United States was Pelican Island, Indian River, Florida. Here the birds used to nest in April and May, but for some reason they began to nest earlier and earlier and within a few years were laying their eggs in November. Another breeding reservation on the coast of Louisiana had upwards of ten thousand birds in 1915, but that season a tropical hurricane swept over the island and drowned the entire group.

Both species of pelicans need all the protection they can get, for they are ruthlessly persecuted by fishermen. Yet careful study has established the fact that the fishes taken by both comprise almost entirely species of little value for food, and some that are actually the serious enemies of really desirable species.

★ Conservation ★

A part of Nature Magazine each month is devoted to the expression of practical opinions on the vital issues affecting our use and abuse of natural resources, including wildlife, and dedicated to the purpose of assisting Americans to play a militant part in the attainment of constructive conservation aims.

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GENERAL ★ WILDLIFE ★ FEDERATION

The second North American Wildlife Conference was held at St. Louis, Missouri, March 1 to 4, 1937. This was an outgrowth of the general conference that convened in Washington, D. C., February 3 to 7, 1936, when the General Wildlife Federation was formed, and a temporary constitution was adopted. (See Nature Magazine, April, 1936, p. 235.) The present meeting, however, was called by the American Wildlife Institute, a separate organization. We understand that this course was necessary, since the Federation had no funds to finance the meeting.

Canada's Wildlife Service was represented officially by Hoyes Lloyd, of Ottawa, Superintendent of Wildlife Protection, and Mexico, by Juan Zinser, Chief of the Game Service, and prominent in connection with our treaty with Mexico for the protection of migratory birds and game animals, which has been ratified recently.

The program called for the presentation of a large number of papers on a great variety of subjects. Usually there were three or four sessions held simultaneously, which made it impossible for one interested in wildlife from a broad standpoint to hear more than a small proportion of the papers. However, a printed report of the proceedings is promised.

Representatives of the various Government bureaus concerned with wildlife were present, and read many papers. National organizations represented included the American Nature Association, National Association of Audubon Societies, Izaak Walton League, American Humane Association, and General Federation of Women's Clubs. Delegates from most of the state game organizations were present, but few gave papers. Several colleges that specialize in wildlife were on the program.

On March 3 the entire day was devoted to the permanent organization of the General Wildlife Federation of which Jay N. Darling was unanimously chosen president.

Vice-presidents are: David A. Aylward, Peabody, Mass., State Game and Fish Commissioner of his State; William L. Finley, Portland, Oregon, naturalist and author; and W. B. Jones, Montgomery, Alabama, geologist.

Directors-at-large follow: Charles Giaque, Edgerton, Ohio; William J. Aaberg, Madison, Wisconsin; Justus H. Cline, Stewartsdraft, Virginia; Mrs. H. G. Bogert, Akron, Colorado; George Grebe, Kuna, Idaho; Lee Miles, Little Rock, Arkansas.

Regional Directors follow: John L. Curran, Providence, Rhode Island; Colin Reed, Washington, D. C.; C. P. de la Barre, Blacksburg, Virginia; W. B. Jones, Montgomery, Alabama; Edward K. Love, St. Louis, Missouri; Louis Dunton, Fort Wayne, Indiana; Bella L. Foresman, Lansing, Michigan; W. J. Tucker, Austin, Texas; Harold Thomas, Des Moines, Iowa; Charles N. Fahr, Salt Lake City, Utah; W. L. Finley, Portland, Oregon; George E. Walton, Oakland, California; Charles Plummer, Cheyenne, Wyoming. The Federation favored the establishment of a National wildlife conservation week, tentatively set for February 20, 1938, and the raising of a fund.

A seven-point program for action, as given to the press, follows:

1. Establish government responsibility for restoration and conservation of wildlife.

2. Secure establishment of standing conservation committees in both Houses of Congress.

3. Work for adequate appropriations for the United States Biological Survey and the United States Bureau of Fisheries.

4. Establish a system of co-operative wildlife research between the Federal Government and the states, and work for legislation earmarking the $3,500,000 spent annually by hunters and fishers for licenses to conservation purposes.

5. Establish complete government jurisdiction over all water resources of the United States to prevent pollution, misuse and waste.

6. Work for adequate federal appropriations for wildlife research.

7. Support enforcement of all state and federal laws protecting wildlife.

We cannot admit entire satisfaction with this program, and will give some of our reasons.

When this Federation was first proposed, in February, 1936, and at various times since, it was announced that participation in the work of the Federation by a great variety of organizations was sought. This feature was summarized in a primary paragraph of the temporary constitution, as follows: "To organize all agencies, societies, clubs and individuals which are or should be interested in the restoration and conservation of wildlife into a permanent, unified agency for the purpose of securing adequate public recognition of the needs and values of wildlife resources." Earlier it was announced that, in addition to the sportsmen's groups, all civic clubs, Chambers of Commerce, Boy Scouts, Girl Scouts, bird clubs, garden clubs, women's clubs, 4-H clubs, and farm groups were to be represented.

During the past year we have scanned many hundreds of pages in an effort to evaluate the trend of developments along this line. We have found little evidence of progress. We have noted instances where genuinely-interested conservation groups have been refused participation in regional meetings. At the recent conference we could discern little actual improvement in conditions. A prominent wildlife specialist and educator, Aldo Leopold, thus described the current situation: "We face a future marked by a growing public zeal for conservation, but a zeal so uncritical—so devoid of discrimination—that any nostrum is likely to be gulped up with a shout. No program is too amateurish for public support, if it bears the proper label and is backed by ballyhoo." And he spoke truly.

On page 304 we quote an apt editorial, packed with truth, that appeared in a St. Louis paper, announcing the Conference.

We offer these remarks not in a spirit of mere criticism, but to call attention to a condition that is extremely serious. During the past year those unselfishly interested in general wildlife conservation (and these people outnumber overwhelmingly those selfishly interested) seem to have made little impress on this Federation. If no better progress is made in the coming year it would seem to mean that, from the standpoint of true conservation, the high aims sought are not likely to materialize.

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WILLIAM T. HORNADAY

Elsewhere in these pages we record the passing of Dr. William T. Hornaday, and pay homage to his achievements. In fact, the record of his brave and undeviating fight for America's wildlife stands as a monument to the man and his works more enduring than any tribute of mere words. It is well to stop and realize, however, that Dr. Hornaday's passing imposes a greater responsibility upon those whose interest in protecting and increasing the birds and mammals of the United States is unselfish, as was his.

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HUNTING ACCIDENTS

The December, 1936, issue of the Wisconsin Conservation Department records thirty-six hunting casualties that occurred during the fall shooting season. Thirteen of these resulted fatally. Ten, some of them fatal, involved boys ranging in age from eight to fifteen years. The injuries not immediately fatal ranged from more or less severe wounds in the limbs, with loss of the member in some cases, to partial or total blindness. The majority of accidents resulted from the carelessness of others. A few persons were wounded in their homes or workshops by bullets coming from a distance. The story is typical of many similar accounts that have come to us through the years.

The list is published to emphasize the fact that, despite warnings issued by the department, such accidents continue to occur with alarming frequency. Similar lists might be compiled by any state. We would call particular attention to the responsibility of parents to keep firearms out of the hands of children. At the same time, we must admit that the almost total lack of restraint put on manufacturers and dealers, particularly in the matter of promoting the sale of small rifles, makes almost impossible the task of protecting even one's own children from this danger. Our country, all countries, must go far before the grave responsibility in this plain duty is realized.

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OHIO STANDS BY THE QUAIL

By a narrow margin quail were left on the songbird list by Ohio House of Representatives. The bill, which would have permitted shooting on approved areas, was actively urged on the plea that the measure would aid in propagating the birds. Following an acid remark by one woman member who said, "I don't know how you're going to propagate quail with a gun," friends of Bob-white enlivened debate with renderings of the quail whistle. The vote was sixty for the bill, fifty-nine against, seventy votes being necessary for passage. It is reported that, in view of the close vote, an attempt will be made later in the session to reintroduce the measure and try to secure its passage. We hope not.

Falconry is a word that suggests the romantic past—knights in armor and fair ladies in velvet. What is its modern significance? What are the practical aspects of falconry as a fad or faddish sport? What is its bearing on the conservation of hawks? What does it mean to our population of protected song birds? Mr. Lumley's article gives us good reason to pause and consider the meaning of falconry today.

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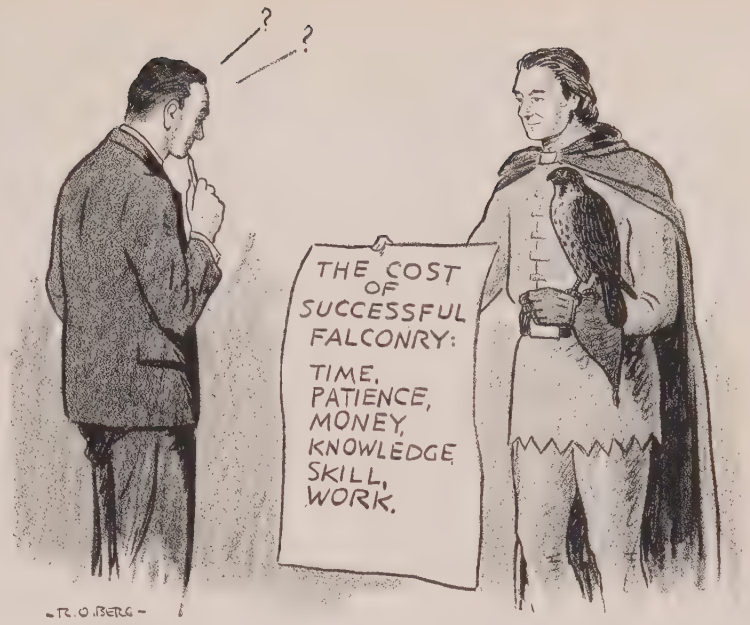
FALCONRY

By
ELLSWORTH D. LUMLEY

Illustrated by Russell O. Berg



Last week I was asked a question which has been asked of me a score of times during the past three years, "Can you tell me where I can find a falcon's nest so that I may get some young falcons?" A variation of the question has been, "Do you know where there are some falcons that I can trap?" In every case the birds were wanted for falconry.

The interest in falconry shown by the questioners has been aroused in various ways. One university girl had spent a summer at Woods Hole where she had seen a tame falcon owned by one of the students and so decided she wanted a falcon. A Montana boy several times had witnessed the daring dash of falcons, and, after reading a short account of hawking in a sportsmens' magazine, wanted to train some birds. A boy from an eastern state became interested through a bird talk he had heard in which hawking was praised as great sport and as a means of conserving our hawks. Most of those asking me for information had read in some book or magazine a glowing account of this sport.

After talking with each of the prospective falconers I became thoroughly convinced that published articles that encourage the sport, and speakers who defend hawking, are harming the sport and, at the same time, are doing an injustice to our birds of prey.

A study of the literature pertaining to falconry reveals that the training of hawks is far from being an easy task. Hawks are extremely wild and shy. In order to gain their confidence a trainer must be able to spend from eight to twenty-four hours a day carrying the birds about. This requires infinite patience, a quality few people of this day possess. It also requires all of the time of a trainer, and few people can devote unlimited time for weeks and months to the training of birds.

The falcon's training requires the greatest of skill. One mistake may make the difference between a prized bird and one that is useless. Few of those who desire to take up the sport know even the simple fundamentals, to say nothing of the many fine techniques of the training that will enable them to turn out a desirable bird. One wonders what will become of the many birds ruined for the chase by clumsy training. Will they be liberated so that they may mate and raise young? If liberated will they have a chance to breed before they are recaptured and forced through another useless training period? Or isn't there the possibility of many useless hawks being held captive in hope that they may be sold or traded for better birds? Such birds will undoubtedly suffer from lack of care and careless handling. They certainly will add nothing to the sport or to the conservation of hawks.

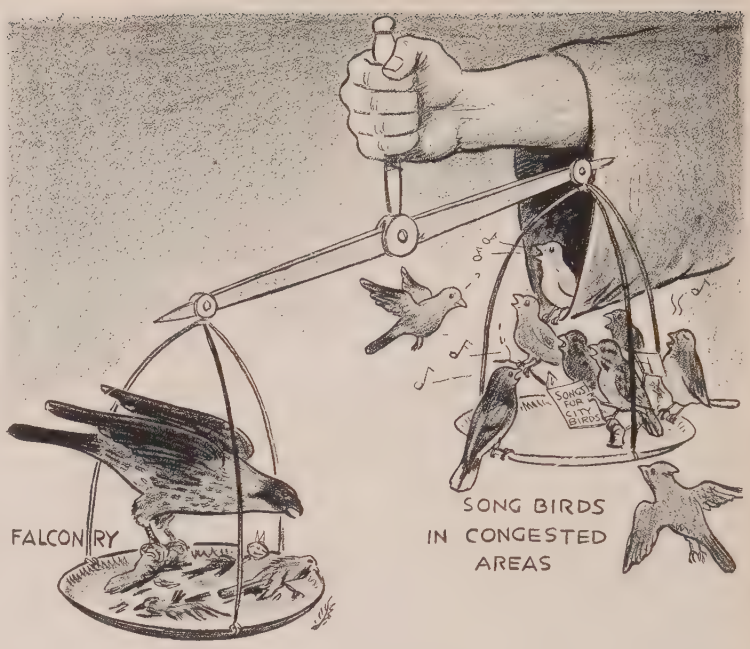
Giving a captured bird proper care requires considerable work and some outlay of money. They must have clean, comfortable quarters. It is not enough to lock or tie them up in a small box on the back porch. That those wishing to take up the sport do not always think of the problems of housing the birds was shown by one college girl who was quite determined to get a falcon although she lived in a small apartment in a large city. The birds must be given every opportunity to keep themselves clean. Cages and boxes in which they are housed must be regularly washed. Unless one is willing to do dirty work of this kind he should not attempt to raise hawks.

Feeding is a major problem and yet is barely mentioned in hawking literature. To get enough birds and rodents to feed a young, growing falcon is an almost impossible task for the average person. Mice are not available unless one lives on a farm, and most of our birds are protected, and properly so. In most cases the enthusiast will start by trapping and shooting sufficient food of the right kind, but as soon as the novelty wears off and results are not quick in coming, feeding will degenerate into a habit of getting scraps from the meat market and using crumbs from the table.

Falconry is a sport that requires much more study than the sport of hunting with a gun. It is not so simple as being able to line up the sights and pull a trigger.

Sportsmen as a whole are not inclined to spend much time in studying their sport. This is shown by the bitter complaints that have been registered because shooters are now expected to identify a few of the many species of ducks they shoot. Why should one believe that those taking up falconry would be any more inclined to study the fine points of the sport than are the men who carry the gun? I cannot believe that falcon clubs will devote any more time to study than do sportsmen's clubs spend in studying wildlife problems.

I fail entirely to see where there is any sound basis for the argument that popularizing falconry will aid in conserving the hawks. To say that more young hawks will reach maturity because falconers will guard the nests from egg collectors may sound plausible. We should realize, however, that today egg collectors are relatively few, especially in most of the regions where falcons nest. Furthermore, as hawking grows in popularity, more inexperienced people will be searching for nests to rob of young, and we can anticipate a higher price upon the head of every falcon with the resulting diminished numbers of breeding birds. Granting that a true lover of the sport will often release an adult bird and allow it to return to the wild, it is doubtful if inexperienced hawkers will be willing to do this. To hold the birds as captives, thus saving them from the guns of hunters, certainly will not save the falcons, for it makes no difference to the hawk population whether they die by shot in the wild or in cages from old age.



Falconers are inclined to become indignant at the statement that falconry is destructive to the song birds. They point out that falcons live to a great extent upon birds, and hawks in the wild will take more song and game birds than captive hawks will get a chance to kill. It is perfectly true that the hawks in the wild will destroy more song and game birds than they will after being captured and trained. But in the wild the activities of the hawks are scattered over a wide region, while there will be a tendency to concentrate them after they are captured. Most of our sportsmen today are found in the more densely settled states, resulting in heavy kills in these states as compared with states of a scattered population. The same would hold true of hawking; many birds captured and possibly trained in western states would be shipped and sold in eastern states. The falcons would kill no more song birds when concentrated, but they would be removed from an area where they are aiding Nature's balance and would be overkilling in another area. Meadowlarks, robins, woodpeckers and other useful birds would suffer greatly from such concentration of trained hawks.

Many falconers claim they do not wish their hobby to become a popular fad, yet through publicity they are encouraging many incompetent persons to experiment with the sport. In fact, falconers have been quick to criticize those who discourage others to take up hawking. American people are faddists. Any type of amusement, given proper publicity, will in a short period of time have thousands of new followers. If the true lovers of falconry wish to keep their sport above the reproach of bird lovers and conservationists, they should tell all of the truth about their hobby. Facts about the time and patience required to train hawks should be given as well as accounts of the excitement of the hunt. The boys and girls I have talked with who wished to become falconers knew little or nothing of the real work in caring for and training falcons, yet they would unhesitatingly have robbed the young from any falcon's nest I might have told them about. They had given little thought to anything besides the thrill of owning a beautiful, dashing falcon.

Falconry had its place in the Middle Ages. It was a sport and a means of entertainment at a time when there was little amusement, and class distinctions gave certain individuals unlimited time and money to follow such a hobby. Certainly there can be no justifiable reason today for the few followers of the sport to encourage others to capture and force magnificent wild creatures to live much of their lives in a hobbled condition in a darkened world. If our hawks can be saved only by forcing many of them to live unnatural lives for man's entertainment, then it is far better that they follow the trail of the Carolina paroquet and the California grizzly.

Things to Think About

The Indiana Department of Conservation, according to a press release, will liberate 35,000 quails and pheasants "as breeding stock" throughout the state. Prior to starting the distribution, the announcement continued, inspection of all areas in which birds were proposed to be liberated was made to determine if conditions were "favorable as to food, cover and protection." This announcement sounded like a genuine effort to replenish the state's quail and pheasant population until we came to a sentence buried down in the fourth paragraph that said: "Birds being released this spring will be on land which is not closed to hunters." The food and cover may be adequate in the areas selected, but we can't say much for the "protection" offered.

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Said to be the most far-reaching survey of its kind ever attempted in the United States, the National Park Service has launched a nation-wide study, in cooperation with state and local authorities, to determine the recreational needs of the people of the United States. An inventory of existing and potential park and recreation areas will be made as a basis for immediate and long-term planning.

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Presidential proclamation has changed the Cumberland National Forest Purchase Unit into a full-fledged National Forest, the Forest Service announces. Approximately 90 per cent of the million and a quarter acres of rugged land, wasted by destructive cutting and fires, will be put to work growing trees. Furthermore, recreational values will be developed and important watersheds will be improved.

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From Democrat to Democrat is a letter to President Roosevelt from Guy Allot, Mayor of Alliance, Ohio, an ardent conservationist. The Mayor writes:

We conservationists, who are at the same time passionately devoted Democrats, regret that the President can not administer federal laws so as to meet the unanimous approval of those who are anxious to protect wildlife and natural resources. The known concern of the President for practical conservation is the most cheering factor in the campaign for the protection of Nature.

Whose advice shall be accepted and whose policies shall be followed make the problem. For me, the unselfish policies of such an organization as "The American Nature Association" seem more likely to promote national welfare than the admittedly selfish interests of ammunition manufacturers.

Biologists, engineers, economists and educators can be hired to testify on either side, as experts. This fact makes doubtful the achievement of a perfect settlement by appointed experts. In the last analysis, decision must be made by elected officials headed by the President.

A constant threat is made against the democratic form of government when an enemy of good government shrewdly gets the altruist to blame the failure of ideal results upon "politicians, political appointees" or "political influence."

Every elected official is glad to make the best appointments and to administer government perfectly but is hampered by the lack of unity among the friends of good government to agree upon the best policy.

The future of conservation is dark if ideal policies are not put into effect by the present administration, which is more interested, more intelligent, more idealistic in the protection of natural resources than may be expected from ensuing administrations. I hope the President will believe that a real majority of Americans desire the isolation of some wilderness areas and the restoration of animal, bird and fish wildlife in key localities even if the stoppage of hunting and fishing is necessary, as well as the expansion of the reforestation program.

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The fifteenth annual convention of the Izaak Walton League of America will be held on April 29, 30 and May 1 in the Hotel Sherman, Chicago, Illinois. Forestry, wildlife, pollution, flood control and other subjects of interest to conservationists will be discussed.

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Interesting commentary on the esthetic progress of America is to be found in the result of the campaign to prohibit billboards on the approaches to the new San Francisco-Oakland Bridge. Led by the California Roadside Council, the City and County Federation of Women's Clubs, the northern California chapter of the American Institute of Architects and the Citizens' Bay Bridge Protective Committee, petitions were circulated to bring to a vote of the citizens the question of a prohibitory ordinance. The vote was held on March 9 and by a vote of 76,436 to 65,315 the regulatory ordinance was defeated.

In the campaign against the measure Foster and Kleiser, West Coast billboard barons, dug deep in the war chest. A wide variety of leaflets were financed, full-page newspaper advertisements used, and the opposition of labor groups, real estate organizations and some short-sighted business organizations was aroused. This was offset only by very limited funds and the appeal to reason of the people interested in decent-looking approaches to the splendid bridge.

It is encouraging that 65,000 people shared the losing opinion. That number of people, agreeing to patronize business that *does not* advertise on the bridge approaches, can exercise a right much more effective than the ballot. This right is now being exercised by thousands of people who resent billboards in places where they do not belong, which is quite a number of places.

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Members of the American Society of Mammalogists will hold their nineteenth annual meeting in Washington, D. C., May 4 to 8. Headquarters of the meeting will be at the Hotel Raleigh. W. C. Henderson, Associate Chief of the Biological Survey, is chairman of the local committee on arrangements. All regular sessions will be open to the public.

We consider that the arguments brought out by the pamphlet here reviewed have been strengthened by recent developments in the battle to decide whether our ducks and geese shall be saved or destroyed. In our next issue we purpose discussing this matter further.

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New Waterfowl Teaching Unit

"TAKE YOUR CHOICE!"

A REVISED edition of *The Shortage of Waterfowl,* prepared by Ellsworth D. Lumley, has been issued by the Emergency Conservation Committee, in which the reasons for waterfowl decline and the possible methods of saving them, are strikingly set forth. Mr. Lumley carefully weighs the losses caused by drought, drainage, disease, parasites and predators against losses caused by the hunters. He then logically arrives at the conclusion that the only way to restock the country is to reduce the numbers of ducks and geese killed every year so that we may be assured of a satisfactory breeding stock.

Recording Mr. Lumley's views in order, we find that recent droughts, in 1930 and since, destroyed many feeding and resting places on the mid-west flyway and have been a contributing factor in the decline of waterfowl since that time. Yet it must be remembered that "eighty-five percent of the waterfowl of North America are raised in Canada; and though many of the nesting areas of the United States and southern Canada have been destroyed, the vast swamps in the north of Canada have hardly been touched by the drought. Government officials tell us that much of this enormous breeding territory, with its abundant insect life and luxuriant growth of food, is only one-third to one-tenth utilized."

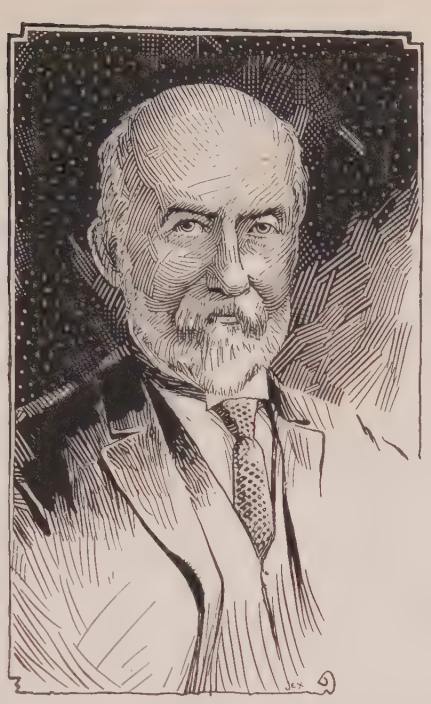
Millions of acres of land were drained in an effort to make swamp land productive and profitable, and millions of acres of breeding and resting grounds were destroyed. Again, Mr. Lumley shows: "Drainage, like drought, was but a contributing factor to the shortage of waterfowl. Drainage was carried on only in the favorable agricultural districts, not in the vast breeding territories in the north."

Disease and parasites take an annual toll of waterfowl that varies from year to year. Predators also kill waterfowl, but the Special Senate Committee on Conservation of Wild Life Resources found few witnesses who even mentioned predators as a menace. Nothing was said about the crow at this hearing, the bird about which so much false propaganda has been forthcoming since from the sportsmen's magazines as "the ducks' greatest enemy."

Let us look at some hunting figures. Mr. Lumley quotes the estimate of the Biological Survey that there were 44,000,000 ducks in North America at the opening of the hunting season in 1934 and only 27,000,000 at the end of it. Four out of every ten had been killed in one season! The Department of Agriculture also estimates that at least one bird is crippled and probably lost for every two killed and brought to bag. "This becomes appalling," Mr. Lumley says, "when it is realized that probably 15,000,000 ducks are counted into the bags of American hunters each season. It means that at least 7,500,000 birds are crippled and lost. They are not included in the gunners' bags, and they are not included in the number that return north to rear young."

Since Mr. Lumley's warning was issued, the ducks and geese have encountered another hunting season, and their need for relief is certainly no less urgent. The waterfowl population indicated by the latest broadcasts seems to us decidedly discouraging. Closed seasons are still needed.

William Temple Hornaday



AN APPRECIATION

By

EDWARD A. PREBLE

Illustrated by Jex

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ON MARCH 6, 1937, Dr. William Temple Hornaday, a man who in unselfish service in the conservation of wildlife, especially that of North America, easily stands out in high relief above all his contemporaries, passed away at his home in Stamford, Connecticut.

Hornaday was born on December 1, 1854, near Plainfield, Indiana, the son of William and Martha (Varner) Hornaday. He lived his early life on a farm, and from his broad knowledge of zoology it is certain that he was interested from childhood in all outdoor matters. He attended the grade schools and Iowa State College, and at the age of twenty was attached to Ward's Natural Science Establishment, an institution engaged in supplying natural history material to schools and museums. In the years 1874-1876 he did general zoological collecting in Florida, the West Indies and northern South America.

At this period the larger vertebrates of South America and the Old World were almost unrepresented in even the more important museums of the United States. This fact led the Museum of Comparative Zoology at Cambridge, Mass., to give Professor Henry A. Ward an order for every vertebrate species, from elephants down, that could be gotten from India and Malaysia. It is a high tribute to young Hornaday, then only twenty-two, that he should have been selected to execute this important task. Professor Ward, his employer, accompanied him as far as the Red Sea, *via* Liverpool, London, Paris and half a dozen Italian cities, not neglecting the museums and art galleries, and thence to Egypt and the Red Sea. From Jeddah, Hornaday took ship for Bombay, where he landed on January 17, 1877.

Young Hornaday arrived in India alone, depending for assistance on what native help he could pick up. But his energy and enthusiasm everywhere gained for him the friendship of the officials and private citizens alike, and he was usually able to make his way without undue loss of time. Naturally one cannot recount details of the difficulties that he met and conquered. At times he had to contend with the prejudices or ignorance of local rulers; he was often seriously hampered at critical times by inefficient or unruly helpers; on several occasions he was dangerously ill. But through it all his indomitable courage and energy never failed. He traveled and collected widely in India, Ceylon, the Malay Peninsula, and Borneo, and returned in 1879, by way of China and Japan, with collections that were voluminous and priceless.

His account of this trip, *Two Years in the Jungle,* which he published in 1885, is fascinating reading to this day. In it one is enabled to gain a clear picture of the breadth of interest, the vivid powers of observation and description, and the untiring energy that had led to his being selected for this important trip, and which characterized him to the day of his death.

From 1882 to 1890 Mr. Hornaday was Chief Taxidermist at the United States National Museum, and during his régime the art made great strides, and he had a part in several notable events; one was the collection of an adequate series of specimens of bison from Montana in 1886, when it was evident that the species must soon disappear from the plains. The other was the establishment of the National Zoological Park on its present site, the outgrowth of a few live animals that were kept in paddocks back of the Smithsonian Institution. During this period the book on his East Indian work, and *Extermination of the American Bison,* a classic on this species, were issued.

Mr. Hornaday was engaged in private business from 1890 to 1896, and in that year he was called to the New York Zoological Park, of which he was Director until 1926, when he retired to devote the remainder of his life to conservation work.

In 1913 he organized the Permanent Wild Life Protection Fund, the income of which he administered without salary until his death. This activity was sponsored by a large number of public-spirited men and women whose names cannot be given in this brief sketch. The complete story of his efforts in behalf of our persecuted wildlife will probably never be told; these included reforms in the use of the plumage of wild birds for ornaments, and regarding seasons, bag limits, unduly destructive methods of taking, the sale of game, and the general treatment of all creatures. In advocating reforms he seldom compromised with his adversaries, and never until he was convinced that he could do no better, and could record some progress. Many of his opponents secretly applauded his courage and motives, even though they did not agree with his methods. By some he was unjustly vilified, and his motives were impugned; usually such attacks arose from ignorance. But often there were passed along stories of excessive destruction of game at his hands, the evidence alleged to be supported by his own books. Such charges

merely showed that his enemies had never read his writings. Mr. Hornaday seldom paid any attention to such attacks. He was following a straight course, and would not deviate. But what can one say of such methods of attack?

Besides *Two Years in the Jungle,* which ran into at least ten editions, Hornaday has about twenty books to his credit, and innumerable articles. His subjects included travel, conservation, the wild animal mind, museum practice, national preparedness, and Bolshevism. He even wrote a book or two of fiction, one of verse, and articles on war debts. He continued writing and publishing to the last, even when hopelessly bed-ridden. Through the years he received, from both American and foreign institutions, several medals and other evidences of appreciation of his work in various fields.

Mr. Hornaday married, on September 11, 1879, Miss Josephine Chamberlain of Battle Creek, Michigan. They had one daughter, Helen Ross (Mrs. George T. Fielding) and there are three grandchildren, now grown. To his family, all of whom survive him, Mr. Hornaday was intensely devoted, and when they could all gather under his roof, his happiness was complete.

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WILDLIFE CONFERENCE

PUBLISHED in the *St. Louis Star-Times* on the eve of the meeting of the North American Wildlife Conference, the following editorial is quoted in full because we regard it as a forceful presentation of the situation that faces our wildlife today:

Today the second North American Wildlife Conference opens a four-day session in St. Louis. It brings to this city many of the most devoted friends of wildlife, and the best informed students of the subject. If it follows the pattern of the first conference, held in Washington last winter, it will concentrate attention on the distant future, and ignore the present crisis.

From a long-range point of view, the great necessity for wildlife is a protected habitat, with food, shelter and safety from enemies.

From a short-range point of view, the one vital necessity is to protect wildlife from its chief enemy—*the man with a gun*—until its protected habitat is established.

Up to date, no gathering of sportsmen or sportsmen-conservationists has been willing to face this second necessity—the one of immediate and crucial importance. The man with a gun carries no mirror. He knows the wildlife is disappearing. He blames drainage, drouth, floods, fleas, crows, blue jays, red squirrels, botulism, alkali, oil, bobcats, mountain lions, Indians, Mexicans, coyotes and choking to death on acorns. But 7,000,000 licensed hunters with shotguns and rifles? They cannot see that they have anything to do with it.

Self-delusion has reached the limit. Wildlife is being shot out of existence. If this problem is not admitted and faced, we shall have, in a few years, a wildlife habitat with no wildlife to inhabit it. That is true of migratory waterfowl and it is true of four-footed animals, big and little.

We have no doubt that this situation is realized by a great majority of the conservationists meeting in St. Louis. In the past they have been loath to discuss it because any mention of the shotgun at a wildlife conference interferes with harmony. So the first question to decide is whether wildlife conferences are called for the sake of harmony, or to prevent the disappearance of wildlife. The logical course is to face the facts, and establish harmony on the basis of them. That is the only method that will prevent wildlife from being shot out of existence while plans are being laid for its protection.

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THE WILDLIFE SOCIETY

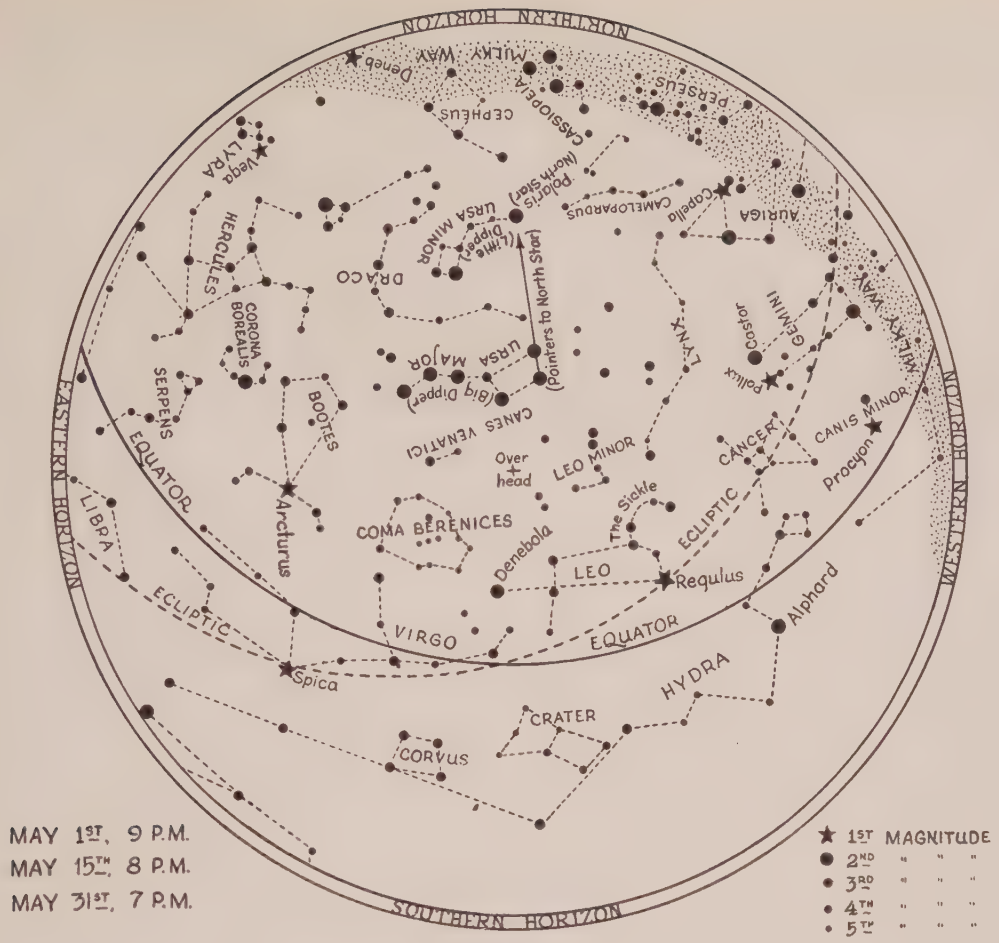
FOLLOWING a year of existence under the name Society of Wildlife Specialists, formal organization of The Wildlife Society was accomplished at St. Louis, Mo., February 27-March 2, 1937. The Society is primarily a professional group in which active members shall be those engaged in the practice or teaching of wildlife research, management, or administration, or who are graduate students of those subjects. Associate members shall be those interested in the objects of the Society who are sponsored by two active members. Some of the principal objectives of The Wildlife Society are the development of all types of wildlife management along sound biological lines, the establishment of professional solidarity among conservation biologists, and the maintenance of the highest possible professional standards.

An official organ, *The Journal of Wildlife Management,* to contribute to these ends, will be launched in 1937, probably as a quarterly, under the editorship of W. L. McAtee, U. S. Biological Survey, Washington, D. C.

The governing body of the Society for the year 1937, consisting of the officers and six regionally representative councillors, includes: President, Rudolf Bennitt, Associate Professor of Zoology, University of Missouri, Columbia, Mo.; vice-president, Joseph S. Dixon, Field Naturalist, National Park Service, San Francisco, Calif.; secretary, Victor H. Cahalane, Assistant Chief, Wildlife Division, National Park Service, Washington, D. C.; treasurer, Warren W. Chase, Regional Biologist, Soil Conservation Service, Des Moines, Iowa.

The councillors are: Region 1 (Northeast), Arthur A. Allen, Professor of Ornithology, Cornell University, Ithaca, N. Y.; Region 2 (Southeast), William J. Howard, Regional Wildlife Technician, National Park Service, Richmond, Va.; Region 3 (North Central), Samuel A. Graham, Professor of Economic Zoology, University of Michigan, Ann Arbor, Mich.; Region 4 (Northern Great Plains), Verne E. Davison, Regional Biologist, Soil Conservation Service, Rapid City, S. Dak.; Region 5 (Southwest), Walter P. Taylor, Senior Biologist, Bureau of Biological Survey, Texas A. & M. College, College Station, Texas; Region 6 (West), E. Lowell Sumner, Jr., Regional Wildlife Technician, National Park Service, San Francisco, Calif.

The following advisory committee also has been named by the president: Aldo Leopold, University of Wisconsin, Madison, Wis.; Herbert L. Stoddard, Thomasville, Ga.; Joseph Grinnell, University of California, Berkeley, Calif.; Ralph T. King, University of Minnesota, St. Paul.



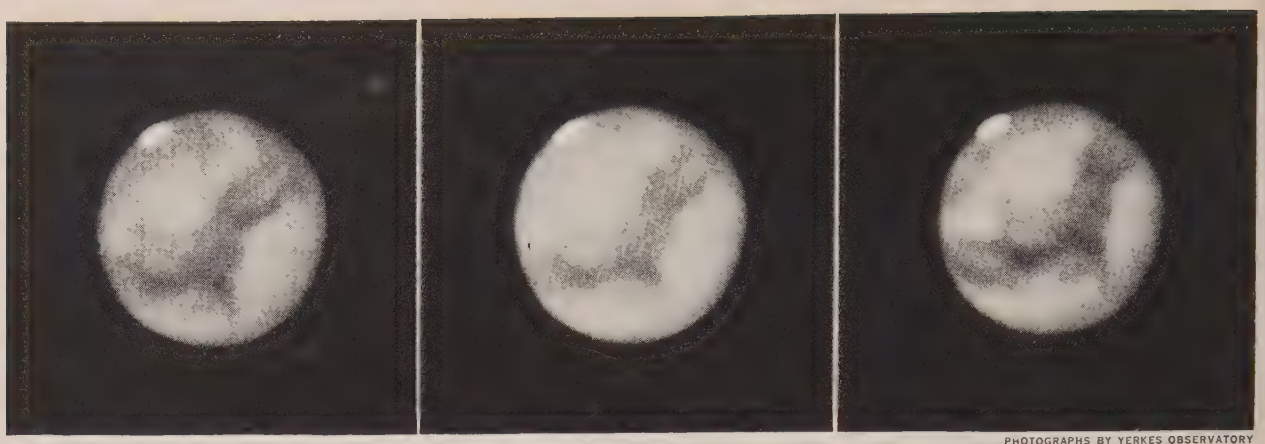
To use this map hold it before you in a vertical position and turn it until the direction of the compass that you wish to face is at the bottom. Then below the center of the map, which is the point overhead, will be seen the constellations visible in that part of the heavens. It will not be necessary to turn the map if the direction faced is south.

Mars Once More Approaches the Earth

By ISABEL M. LEWIS

EVERY two years and two months the fiery little planet that bears the name of the God of War comes into favorable position to be viewed from the earth. Opposition with the sun, occurring when Mars is in line with sun and earth, with the earth between the other two bodies, will occur on May 19. Mars will be nearest the earth eight days later, at a distance of about 47,242,000 miles. This is about midway between the distance at a most favorable opposition when the planet comes within 35,000,000 miles of the earth and the most unfavorable opposition when Mars is at a distance of more than 62,000,000 miles. This great difference in the distance of Mars at different oppositions is because the orbit of Mars departs so much from a circular form. The most favorable oppositions always come the latter part of August at intervals of fifteen or seventeen years. The last was in 1924 and the next will be in 1941. At such favorable times one may also see in powerful telescopes the tiny little satellites of Mars, Phobos and Deimos, less than twenty miles in diameter.

Mars will be slightly brighter than Sirius this month and at a most favorable opposition it is even brighter than Jupiter. It also is retrograding this month, or moving from east to west, from the constellation of Scorpio into Libra. It is always interesting to compare Antares, the first magnitude star in Scorpio, whose name means "Rival Of Mars", with the ruddy planet, for both star and planet are reddish. At times, when Mars is in the part of its orbit farthest from the earth, Antares is a full magnitude brighter than Mars, although now the planet far outshines it. It is even more interesting to recall that actually Antares is one of the super-giant stars, 160 light years distant from the earth, and has the greatest known diameter of any star, about 400,000,000 miles, so that if



PHOTOGRAPHS BY YERKES OBSERVATORY

THE PLANET MARS AS SEEN THROUGH AN INVERTING TELESCOPE

The rotation of the planet is plainly visible in these photographs. The middle picture was taken one hour after the right hand one and the left hand picture twenty-two minutes after the central photograph. The white spot at the top of each picture is the south polar cap of snow. The northern projection of the dark area, which somewhat resembles India in outline, is the Syrtis Major

it were placed in the position of our own sun it would more than fill all of the space within the orbit of Mars, and the planet itself would be a tiny speck in its interior about 4200 miles in diameter. The star, of course, shines by its own intrinsic brightness, and the planet only by reflected light of the sun.

About three-fifths of the Martian surface is orange in color, varying from a pale lemon to a deep orange hue as the transparency of the planet's atmosphere changes. It is believed that this part of the surface consists chiefly of desert sand, reddish in color, and it is this that gives the planet its ruddy tinge. Conspicuous markings are the polar caps of snow, which vary in size with the Martian seasons. Usually only one of these is visible at a time from the earth as the planet's axis is generally tipped so that one hemisphere is toward us and the other partly concealed. These Martian snow-caps extend much farther from the poles than do the snow-caps on our own planet, but it is believed that they are shallow in depth as they sometimes completely disappear in the summer season. There are no oceans or seas on Mars, such as cover three-fourths of the surface of our own planet. The dark areas, erroneously called "seas," lie mostly south of the Martian equator and surround the planet in an almost complete belt. The Syrtis Major, the most prominent dark marking on the planet, reminds us somewhat of India in outline. The much talked of canals of Mars, now generally believed to be dark strips of vegetation bordering on waterways, extend from the melting polar caps toward the equator and darken noticeably with the advance of the Martian spring. They cross both the orange-colored regions, the deserts, and the dark greenish areas, indicating that these latter regions cannot be seas, as originally named. The coarser canals can be seen even in quite small telescopes, but the finer network of lines require larger telescopes and excellent visibility for their detection. Other interesting features of the canals are their great length, in some instances 2,000 or 3,000 miles, their unusual straightness and the fact that they frequently intersect. At many of these points of intersection are dark spots to which Lowell gave the name of oases.

Another interesting feature of the planet is the transient appearance of clouds and storms. Scarcely an opposition passes that a number of these small, brilliant, white spots do not appear. They are generally comparable in brilliancy with the polar cap and are at times of great extent. Ordinarily the surface of the planet is difficult to observe, and only for six months, three months either side of opposition, is any attempt made to study the surface markings. Yet when the visibility is particularly fine, although the time be that of only an average opposition such as occurs this year, even a three- or four-inch telescope will show much that is interesting on the surface of the planet. Probably there has been more debate about the surface markings and conditions that exist on Mars than any other planet in the solar system. The existence or non-existence of the "canals," extent and nature of the atmosphere, composition of the polar caps, whether of snow or carbon dioxide, the surface temperature and, last of all, the question that probably accounts for the never failing interest with which this planet is regarded, the possibility of life on its surface, have all been subjects of more or less discussion.

Some of the most controversial points have at last been settled, to the satisfaction of the majority at least. The polar caps cannot be carbon dioxide for some excellent scientific reasons, and there is not much else that they could be, except snow. The canals, be what they may, are objective and have been repeatedly photographed. The surface air temperature on Mars at the equator at midday was found to be about the same as that on a clear, spring day on the earth, or about 60 degrees Fahrenheit, though the extremes of temperature between day and night on Mars must be great. Photographs taken both in ultra-violet and infra-red light by Dr. W. H. Wright of the Lick Observatory some time ago demonstrated that the diameter of the planet in ultra-violet light appeared to be about 400 miles greater than in infra-red. The difference was probably due to the presence of an atmosphere of considerable (Continued on page 315)

New Covers for Nature Magazine

First of designs submitted in contest will appear next month

ALTHOUGH it may sound unseasonable, NATURE MAGAZINE will appear next month with a new overcoat. While our present cover has served well in durability, it has permitted little range in possible color combinations and, therefore, attractive appearance. With the June issue we will introduce a new cover paper that will not sacrifice strength, and we will also present the first of a series of new cover designs resulting from our recent cover design contest.

JOHN L. DIAL
First Prize Winner

Last December we invited a representative group of typographers to submit cover designs and ideas. One hundred and twenty-six different designs were entered for prize and honorable mention awards. From these the judges—Fred E. Dayton of the Condé Nast Press, Wendell H. Cowles of Bulkley, Dunton and Company, and Richard W. Westwood, managing editor of Nature Magazine, selected eleven for prize awards.

The first prize cover was done by John L. Dial, typographer of the State of Illinois Printing Division at Springfield. This cover will appear on the June magazine. Mr. Dial also received one of the honorable mention awards for a cover that will be used at a later date.

Second prize went to Algot Ringstrom, foreman of the Marchbanks Press of New York City, and his cover will be used in July. Third prize was awarded to Emil Georg Sahlin of the Axel Edward Sahlin Typographical Service of Buffalo, New York, and his design will appear in August.

Other prize-winning ideas will serve as the basis for interesting covers for future issues of NATURE MAGAZINE.

EMIL GEORG SAHLIN
Third Prize Winner

Honorable mention awards, in addition to that to Mr. Dial, were given to Leroy Barfuss, Stewart Simmons Company, Waterloo, Iowa; Ben Wiley, Springfield, Illinois; J. F. Tucker, Tucker Printing Company, New Philadelphia, Ohio; H. W. Armstrong, Lancaster, Pa.; Richard Hoffman, Los Angeles, California; William Dave Cooke, Pacific Grove, California; Charles Phil. Hexom, Decorah, Iowa.

Prior to his association with the State of Illinois, Mr. Dial started mingling with type and printer's ink on a country newspaper, and worked in various printing establishments where he got a thorough background in all phases of the printing business. Having a natural ability at it, he made a study of designing. If the State of Illinois doesn't look out someone is going to steal him away from it, and, judging by the picture we publish herewith, it might be Hollywood.

ALGOT RINGSTROM
Second Prize Winner

Mr. Ringstrom is from Sweden, where he worked seven years as a compositor, studying printing on the side at night. With a scholarship he studied in England and Germany for a year. Returning to Sweden he worked as typographer and graduated as a master printer. Mr. Ringstrom came to this country in 1927, working for a year for the Axel Edward Sahlin Typographical Service before he went to the Marchbanks Press. He has won several awards in typographical contests.

Sweden certainly produces typographers because Emil Georg Sahlin also comes from there. He followed his father and brother into printing, working up from apprentice to journeyman, coming to the United States with his brother in 1914. When he went to work for the Roycroft Shops in East Aurora, New York, he could not speak, read or write English, and found the American type case different from the Swedish. Working nights and studying he soon learned our ways, worked three years for Spencer Kellogg, Jr., at Eden, New York, and, in 1928, joined his brother Axel in his typographic service in Buffalo. He has won numerous prizes, favors conservative layouts, likes only one type face in a layout if possible, uses little ornamentation and declares: "A good typographer is born, just as is a great painter, using the different kinds of type faces as a painter uses his colors."

Nature Magazine in School

A Department of Aid to the Teacher

In order that teachers and parents may further use Nature Magazine as an aid to the study of Nature and Science, this page is devoted to the following brief notes based upon articles in this issue and suggesting ways in which they may be used as a source of inspiration and information. To bring these Nature study thoughts to our readers we have obtained the services of one eminently qualified for the task, and this department is edited

BY ESTHER SCOTT

Instructor in charge of Elementary Science Washington, D. C., Schools

Golden Plovers, Bird Aeronauts

This champion flyer commands the attention and interest of most people, as it has one of the main rôles in the drama of bird migration, a subject of great appeal to young imaginative minds.

In the latter part of April or the early part of May, when bird travelers are arriving from the South in their greatest numbers, pupils can read this delightful article, bearing in mind that it refers to the southern migration, and parts of the *Travels of Birds* by Frank M. Chapman. They can keep a "bird calendar" recording each day the new birds that are seen by members of the class. The name of the pupil can also be recorded to give credit to those who work. A careful description of the bird and its activities when seen should be given by the observer for the class to evaluate. In this way accuracy is encouraged. Migration routes may be traced on the map, and maps of routes drawn in science notebooks. These sketched maps may be illustrated with colored drawings of the kinds of birds that use them, the enemies that they encounter, and the friends that help them as they travel. Such art work should not be forced upon all members of a class, because it might be such drudgery for some that it would kill their interest in bird life. Dates of new arrivals can be compared with the records kept by former classes, or by some adult member of the community interested in birds. This person might also be able to give an interesting lecture on the subject of bird migration.

A comparison of the Golden Plover and an airplane, brings out the stream-lined shape, the lightness of the bones, the great strength and size of the wings in comparison with the rest of the body. The remarkable air resistant quality of the feathers may be demonstrated with a chicken wing. By moving it up and down with the wing held in the position for flight, the air will be found to go through it quite easily on the upstroke but with considerable resistance on the downstroke. Upon investigation the feather and the tiny barbules will be found to be so shaped that little air is caught on the upstroke. The great strength and light weight of the bones may be illustrated by taking two sheets of firm paper and rolling one as nearly as possible into a solid rod, and the other into a cylinder.

At the conclusion of the study of bird migration some pupils might write short "autobiographies" of the life of a Golden Plover, make a "movie" in which this bird was featured, or dramatize the important events in its life.

●

Roadside Menageries

Schools can do more than any other agency to eliminate this form of cruelty. Contrasts can be drawn between the types of life led by captive and wild animals. A play might be written depicting the life of the animal free in the wild and its life in a typical roadside menagerie. The torture endured by animals living on a wrong diet, in crowded insanitary conditions, and subjected to teasing, should be stressed.

●

Making A Small Garden Look Larger

Planning a garden is good for both the garden and the gardener, be he old or young. In one of the elementary schools in Washington, D. C., pupils in all the grades are now making plans for a school garden. They go out and measure off the space. Then, on paper, plots for flowers and vegetables are devised; paths, rock gardens, curious mounds of earth and architectural features compete for attention. Exhibits of these sketches together with the accompanying discussion impress upon these youthful gardeners some of the principles of form and color that a well designed garden should embody. This article will be very useful to this and other groups as a reference for such discussion.

●

The Vespers of Saint Michel

High school pupils and others should read this exquisite word picture of charming old Mont Saint Michel for its English as well as its ornithology. None of us should miss the idea presented here that in Saint Michel the birds and people had somehow learned to live together. In the teaching of the social sciences where the customs and trade of a people are stressed, the manner and extent to which they are able to adapt to their natural environment should not be overlooked. (If they do not understand their natural environment they may be responsible for disastrous changes comparable to those that are now occurring in some of our own states, and, the resulting natural environment may change both their trade and their customs.)

Among the European countries, Germany is now making efforts to preserve some of its vanishing wildlife, by setting aside park areas for the protection of the natural inhabitants. In each country studied in Geography, it would be interesting to find out if, in a thickly-populated area, there could be as many kinds of birds as in Mont Saint Michel. Of course this could not be possible in the countries that make a practice of eating their insect-eating, song birds. In cases where these birds are migratory, international questions may arise due to the fact that persons in other countries enjoy the songs and appreciate the economic importance of these same birds.

●

Falconry

This article should be carefully read by both teachers and parents. In it one can find many reasons why this sport should be discouraged. Once it has been taken up, nature photography might be tactfully substituted for it, but we all know that it is not easy to dissuade a young person who has set his heart upon an undertaking. The best antidote against any endeavor of questionable value is early education. If young people acquire some understanding of the significance of the balance of life (see Balance Experience Realm in *Nature Magazine's Guide to Science Teaching*), they will not want to remove the hawk from the environment where it is functioning. If they have cared for pets and loved them, they will have more sympathy with the wild creature in captivity.

●

Mars Once More Approaches the Earth

Of all the subjects in astronomy, Mars is perhaps the most interesting to children. To many of them Mars is inhabited. This is in part chargeable to the comic strips, with their imaginary heroes who think nothing of visiting the moon or Mars. In consequence the study of Mars offers a very real opportunity to distinguish between belief and experimental fact. Pupils might write a story about Mars describing its appearance, the length of its days and nights, its years, its temperature, atmosphere, and water vapor, and give their reasons for statements. These "articles" could be read and evaluated by the class, using this most interesting article by Mrs. Lewis as an authority. Lists of questions, the answers to which pupils were trying to find, could be kept on a chart. Beautiful decorative charts could be made illustrating the rotation of Mars; Mars in relation to the other planets and the earth. In art, as well as oral and written reports, pupils should be held to a high standard of accuracy of detail. These activities originating with a lesson on Mars will be found to lead out into other fields of science, such as the study of light.

The real purpose of all instruction in astronomy is to give some appreciation of the forces of the universe, and nowhere else can one be so impressed with the grandeur of it all than under the dark blue dome of the starlit sky. Pupils should be taken out on "star parties" whenever it is possible to arrange for them.

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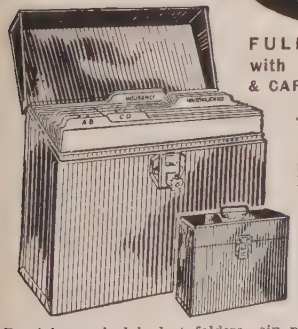

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Nature on the Air

Under the auspices of Massachusetts State College a unique Nature program is being broadcast weekly over the Colonial network covering the New England States. Drawing for the basic material on the members of the college staff, the program is being dramatized and presented by "The Old Naturalist," who will take his listeners on weekly field trips by proxy. It is hoped that this easy chair type of Nature study will be translated into active emulation of the naturalist by a considerable body of his air audience. The dramatization is being made by Francis C. Pray, college editor. The broadcast is at 2:15 P.M. Fridays.

Twin Herb Booklets

One "Old Timer" who is making a successful comeback after long years of retirement is Mr. Herbert Garden, known to his friends as just plain Herb Garden, a culinary and medicinal favorite in great-great-grandmother's day. To help him regain his many friends, Helen Lyman has come forward with two herb recipe booklets, the mere reading of which has made our mouth water. Apparently anticipating these salivary disturbances, Miss Lyman includes with each booklet a packet of herb seeds that will enable us to have our herbs in a hurry. The booklets, each priced at 35 cents, seeds included, are entitled *30 Herbs Will Make A Garden* and *10 Herbs Will Make A Kitchen Bouquet.* They are on sale at the larger bookshops and at 32 Santa Clara Avenue, Oakland, California.

Gardening in the City

If you can achieve a garden within the close-built confines of a large and busy city, tending your spot of soil, nurturing to beauty and strength flowers that must bloom under adverse conditions, the greater is your achievement. And such a garden is, therefore, more valued both by its creator and by those who are privileged to enjoy it. Those who have the courage to undertake such a garden will find both inspiration and sound advice in the pages of *Your City Garden* by Margaret McKenny and E. L. D. Seymour. The book covers not only flowers and how to grow them, but contains suggestions for garden decoration. The publishers, D. Appleton-Century; the price, $2.50.

The Insect Man

The life story of Jean Henri Fabre, French scientist who rose to prominence although born into a family so poor he often did not have enough to eat, is interestingly told in *The Insect Man,* by Eleanor Doorly. It is a book for younger folk, and in the words of the author is a tale of how three English children "went to France to hear the story of Jean Henri Fabre in the places where he lived and to see the homes of some of the insects whose life stories he has written." Miss Doorly has succeeded in presenting the story of Fabre and his insects in such a manner that it will appeal to those of an age who would not appreciate either the translations or Fabre's original French. The book, illustrated with woodcuts by Robert Gibbings, is available from the D. Appleton-Century Company, New York and London, for $1.50.

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Hiking and Camping Forum

Conducted by
ERNEST A. DENCH

Hiking and camping inquiries will be answered by mail if a stamped, addressed envelope is enclosed. Address the Forum editor.

Copies of the following Forum service publications are still available from association headquarters at the single copy price named: *Cookery in Camp and on the Trail* (A Compilation of Sources of Information), 10 cents; *Let It Rain* (Clothing and Equipment Suggestions and Listings), 10 cents; *Pestiferous Months Ahead* (Remedies and Antidotes), 3 cents; *Gadget Lists*, any month or months, 3 cents each.

Hiking Trips Bureau

With Ernest A. Dench as Director, the American Nature Association is sponsoring the Hiking Trips Bureau, which will, between May and October, schedule a varied selection of eastern week-end and vacation hiking trips. These should appeal to those walkers who desire leisurely-conducted trips of from six to nine miles per day, with opportunities for informal Nature study and enjoyment of the outdoors and scenic beauty. There will, in fact, be more to these hikes than just lifting one's feet up and down.

On each trip a comfortable rural hostelry will be the base for overnights and meals, except lunch which will be partaken (and cooked in some cases) on the trail.

The tentative schedule drawn up, and subject to later changes and additions, all of which will be embodied in a printed schedule, is as follows:

May (2 week-end trips): Shawangunk Mountains of New York and the Poconos of Pennsylvania.

June (3 days with optional 7 days' extension): The Southern Appalachians.

July (week-end with optional vacation extension): Southern Taconics of Massachusetts. Also White Mountains vacation.

August: Adirondacks of New York, vacation trip.

September (Labor Day week-end): South County, Rhode Island's little-known wilderness sector.

The schedule will be mailed when ready if a 3-cent stamp is enclosed to defray postage. Address all requests to Ernest A. Dench, Ho-ho-kus, N. J.

May Gadget List

1. The latest in hammocks does not limit you to where Nature chooses to place her handy props. The steel tubing frame (in easy sliding sections without bolts or screws) is a stout support for the 10 oz. double-filled canvas top. This top needs no assembling, and there is also a sewed-in kapok pillow. Weighs, for shipping, 28 lbs. and should fit the auto trunk or running board.

2. A succession of rainy Sundays was what the Forum editor wanted—and got—while wearing a new leather top rubber boot, 12" high. The boots (and the wearer) made a triumphant passage through woodland trails temporarily converted into diminutive waterways. The only moisture on those parts of the stockings inside the boots was that from natural perspiration.

3. A waterproofing liquid for shoes and leather, which has been on the market since 1888, is available in an improved form. The product is now said to keep waterproofed articles polished to a brilliant gloss.

4. A new masculine sport shirt style is woven from a pre-shrunk woven cotton serge. The shirt, which comes in colorful checked combinations, can be worn either inside or outside the trousers. It has a lined collar.

5. In the illustrated Forum booklet on *Cookery in Camp and on the Trail* (copies of which are still available at 10 cents each), an aluminum camp cooking set was listed, with a promise of a full report at a later date. This nested set of fourteen compact utensils for four persons has been used on the Forum experimental trips. For space considerations the report is embodied in the *May Gadget List.*

6. Four different types of pot cleaners, made of bronze alloy cleansing ribbon. The favorite on Forum experimental trips is of the miniature "mop" type with a handle, so useful for scouring the innermost recesses of deep utensils.

7. A paper towel and leaf paper soap, one enclosed inside the other, for each individual washing. Eighteen of them in a dime package. Another firm offers paper towels, each perforated, in roll form, for camp dishwashing operations.

8. During this past winter the Forum editor has itched to try out a pair of bear paw snowshoes, sent to him for that purpose by a French-Canadian firm in Quebec. No snow fell to amount to anything, so the snowshoes are still unused. But if you want the name and address of the firm, with next season in mind, it is yours for the asking.

Apart from the above eight items, the *May Gadget List* contains details of a number of new food products. Available from the Forum editor for a 3-cent stamp to cover return postage.

An Experimental Luncheon

The mainstay of this was a new, thick-bodied soup—not of the bouillon type as the name, *Scotch Broth,* might denote—but one containing plenty of pearl barley, diced potatoes, celery and meat. Mixed with an equal quantity of water, one can makes two individual portions. For dunking purposes, an easily-digested, wafer-thin type of "hard-tack" with a rye flour base, was used.

The dessert course consisted of a variety of canned pineapple in long slivers or oblong slices, easy to eat with the fingers. There is also a good half pint of pineapple juice in each 1 lb. 9 oz. can, which holds 12 pieces of fruit. A chocolate-coated bran biscuit of the sweet sugar-wafer type was served with the pineapple.

Criticism from the lunchers: Good and nourishing as the soup proved, a canned vegetable should have supplemented it. If you want to know what these foods are, send for the *May Gadget List,* 3 cents from the Forum editor.

The Great Smokies

Late this coming June every group or individual identified in some way—construction, maintenance or financial aid—with the Appalachian Trail will be eligible to participate in the biennial conference at Gatlinburg, Tenn. Three southern clubs will be the hosts, and if their hospitality is as lavish as that of the Potomac Appalachian Trail Club at Skyland, Virginia, in 1935, the delegates and guests will have three delightful but all-too-short days. The event will be followed, under the leadership of the PATC, by a week's walking tour through part of the Great Smokies.

Hail, then, the long overdue and badly needed *Guide to the Appalachian Trail in the Southern Appalachians.* This first edition will soon be exhausted, unless the Forum editor's judgment is at fault, for such limited printings tend to make an edition a collector's item after a while. Orders will be filled, at $1.00 a copy, by the Appalachian Trail Conference, 901 Union Trust Bldg., Washington, D. C.

This is Carlos C. Campbell's book. The Forum editor makes this statement with full deference and recognition of the other able contributors, including Editor Myron H. Avery, whose article on the Unaka and the Pisgah throws considerable light on a terrain confusing to northerners.

For geographical reasons Campbell does not appear until page 95. You are apt to pass up this article on side trails because your interest may be in a *through* route. Apart from his sparkling style, Campbell unloads much first-hand information on little-known picturesque spots that the average visiting hiker might never otherwise expect were there. This new guide covers the Appalachian Trail from the Virginia-Tennessee line to Mount Oglethorpe, Ga.

Campbell's annual labor of love is the editing of the *Smoky Mountains Hiking Club Handbook,* the 1937 edition of which has been received. It continues to be a model of what this type of club publication should be—of practical interest alike to members and outsiders. The "toll charge" is 50 cents, and the address—P. O. Box 1454, Knoxville, Tenn.

Another Experimental Breakfast

The surprise element has greatly appealed to participants in the Forum camp cookery experimental trips these past few months. They did not know, until reaching camp Saturday night, what the Sunday breakfast menu would be—and even then the list posted on the bulletin board aroused curiosity, as most of the branded foods were new to them.

This experimental breakfast commenced with a canned apricot juice. It may be too sweet for some tastes, but it has the genuine apricot flavor from ripe fruit.

Next on the "table," served piping hot, was a new wheat cereal. Easy on the palate and fine if you are in a hurry, as no chewing is required. Flapjacks from a prepared flour of western origin was served with drizzled honey and sliced bacon. Then came choice of tea or coffee. We tried making the drip kind out in the open, but it was not particularly successful. Water first boiled in a pot, then the drip grind coffee tied in a cheesecloth bag, and allowed to steep for about 15 minutes.

The May Gadget List, which contains further particulars of foods served, is available from the Forum editor if a 3-cent stamp is enclosed for return postage.

Cincinnati Walks

The 1937 schedule of the American Walkers Association of Cincinnati is a printed booklet of 32 pages, some of them prefaced with a poem appropriate to the month of the trip listings. After perusing the details of the weekly hikes, the Forum editor comes to the conclusion that there is too strong a highway trend. More trail trips would be desirable.

There is a Division of Nature Trails attached to the Cincinnati Board of Park Commission. Miss Hester Stephenson, the park naturalist, has plotted an extensive 1937 schedule, assembled in a refreshingly green cover-clad booklet. Not only are there Nature Walks for all seasons, but Bird Walks take place in May and June—and these trips start as early as 6:30 a.m. The Star Gazing Trips, as the 8 p.m. starting time ones are labeled, extend from the spring to the fall.

Southern N. Y. Trail Map

The domain is the Palisades Interstate Park. Eight trunk trails, and a host of minor ones and many miles of old wood roads, extend through the mountainous Hudson Highlands and the Ramapos, in the Bear Mountain and Harriman sections of the park.

The map, which is in booklet form, is in colors, but you still will have to rely on other maps for contours. There is much supplementary information on the printed pages facing the map, which, being prefolded, makes it easy to handle on a trip. It is priced as "nominal," whatever that means to the prospective map buyer. However, it may be obtained from the Commissioners of the Palisades Interstate Park, 141 Worth St., New York, N. Y.

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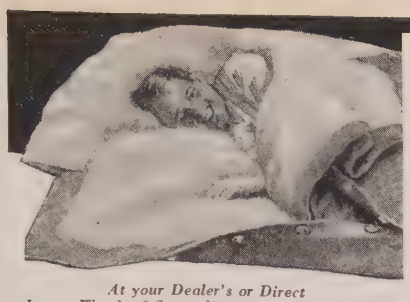

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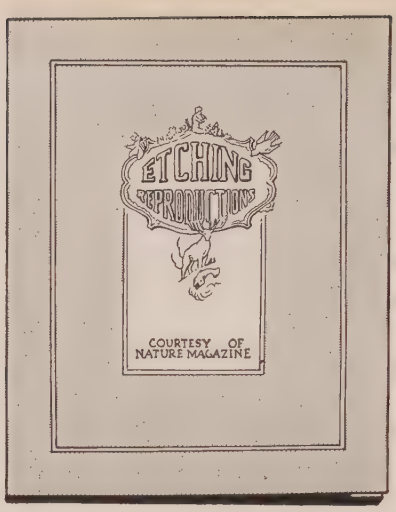

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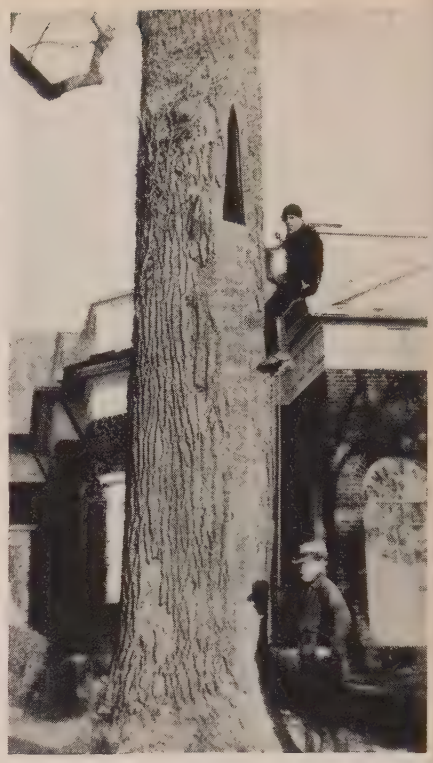
*If you enclose $4.85 now, I'll send you ABSOLUTELY FREE a genuine leather Combination Key and Card Case, value 75c. Same return privilege, of course.



Saving Trees With Rubber

The art of tree surgery has seen nearly as many improvements in recent years as has the art of medical surgery, and one of the most interesting examples of the skill employed in this profession is the project in progress at Monticello, the Virginia home of Thomas Jefferson. The success of the project largely is due to the results of research by George Van Yahres, who, after experimenting with cork and then rubber, submitted his plan to development engineers of the Goodrich Rubber Company who supplied him with a rubber specially compounded to withstand continuous flexing and exposure to extremes in temperatures. In the accompanying photograph, workmen are shown walling up a large cavity in a Monticello tree with the new substance.

Improving Your Garden

An excellent booklet on how to improve the appearance of your garden has been written by Romaine B. Ware, well-known to garden lovers as an author of horticultural articles. His latest effort is *Charming Gardens and How to Plant Them,* published by the R. M. Kellogg Company, Three Rivers, Michigan. This booklet contains complete information on the methods of improving your soil, how to work out effective color combinations, how to solve the odd-sized garden problem and the care necessary for best results. The booklet is profusely illustrated with diagrams that tell the gardener just what to plant and where to plant it.

Maternal Instinct

Kenneth McMaster of Dunedin, Florida, according to the *Clearwater Sun,* found three baby owls in a church belfry and gave them to a friend who lived seven miles away. A month later, the paper reports, the mother owl found her offspring in the cage that had been provided for them and now comes every night to drop food through the wire netting to her family.

Bird Bulletin Series

We are pleased to announce that a fine bulletin series on New Jersey birds, prepared by Leon Augustus Hausman, of the Department of Zoology, New Jersey College for Women, is available from the Agricultural Experiment Station, Rutgers University, New Brunswick, N. J. The booklets, consisting of 32 pages each, are well illustrated and contain complete identification and life habit data so valuable to bird students. Eight booklets have made their appearance so far, treating the following subjects: hawks; woodpeckers, nuthatches and creepers; swallows, goatsuckers and swifts; flycatchers, kinglets and gnatcatchers; vireos, cuckoos and shrikes; buntings, finches and their allies; sparrows; and how to attract winter birds to the garden and home grounds. The bulletins are gratis to residents of New Jersey, where they are in great demand, and only 15 cents each to residents of other states.

The Amerindians

Donald M. Nicol, who for forty years has been in close association with Indians in all parts of the United States and Canada and has studied their history and character, has written a book with the above title discussing, without prejudice, the red man's struggle against the white man and his eventual subjugation. The book is an absorbing account of what the American Indian was, and his social, moral and economic relation to the early settlers of the nation. Published by the Frederick A. Stokes Company, New York, the volume is available for $2.50.

Culture Compendium

Culture Methods for Invertebrate Animals is a 600-page compilation of articles cooperatively prepared by American zoologists under the direction of a committee of the American Association for the Advancement of Science, assisted by many specialists whose names appear with their respective contributions. The book presents the latest and best methods for the management of cultures of a wide range of invertebrate animals of common laboratory types, and will serve the biology teachers in college or high school and the special researchers who need a constant supply of living material. The volume is published by the Comstock Publishing Company, Inc., and is available from them for $4.00.

Goat Taken for Ride

Somebody's goat got everybody's goat on a landing station of the Brooklyn to Queens subway in New York City recently. The six-months-old scion of the family Bovidae butted his way through a gate for a free ride, scattering passengers in his wake. Proud of their regular train schedules, the subway company found it necessary to hustle him into a vacant conductor's booth in front of one of the cars so that the heavy 8:30 A.M. crowd could be taken to work on time. There he stayed until the end of the line was reached. At this point he was turned over to the train despatcher, who admittedly knew nothing of the habits of goats, particularly in a subway. This gentleman called the S.P.C.A., who finally relieved the subway company of their charge, but not until he had consumed a small portion of the numerous odd papers lying about the office.

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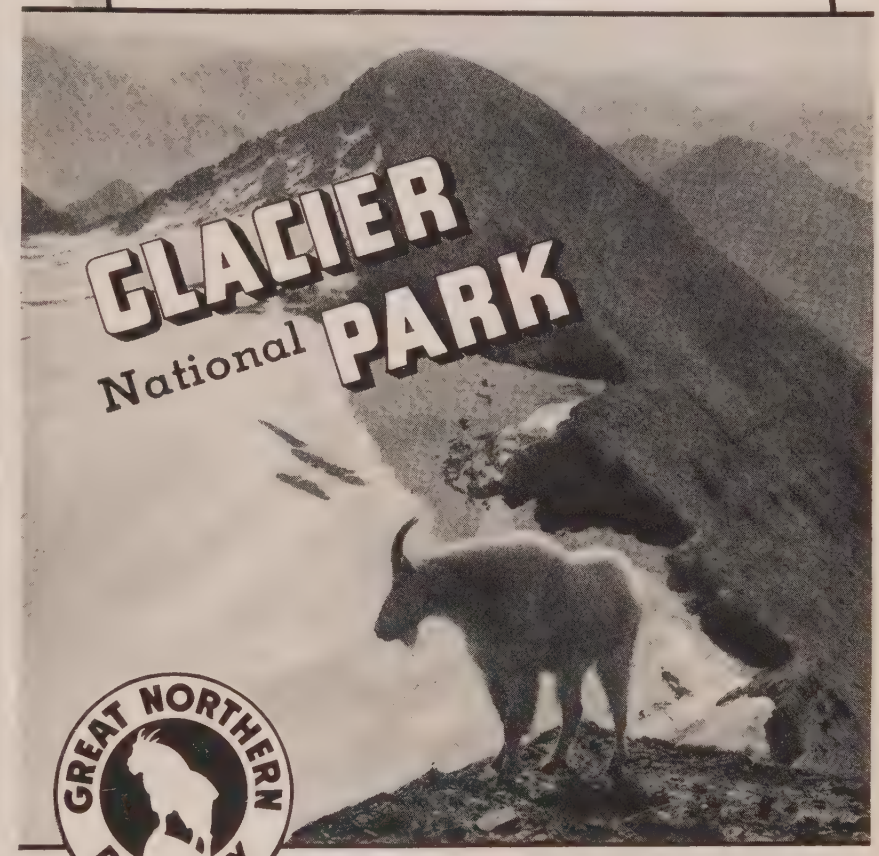
On your trip to or from the Pacific Northwest be sure your ticket reads via Great Northern Railway with low cost Stop-Off Tour for 1, 2 or 3 days in Glacier National Park—"America's most sublime wilderness." Bring your camera and preserve your memories of indescribable scenery—stupendous mountains, glaciers, waterfalls, alpine lakes, gay flowers festooning snow-capped peaks. Make priceless "shots" of friendly wild animals—the whistling marmot, the deer, moose, bear, mountain sheep and high-stepping mountain goat. Truly Glacier Park is the high spot of any vacation.



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QUESTIONS AND ANSWERS

The American Nature Association will be glad to answer each month such questions as its members ask about Nature.

QUESTION: *Which is the largest frog in the world?—J. G. C.*
ANSWER: The largest frog is the Goliath Frog of the Cameroons, Africa.

QUESTION: *When was the English Sparrow introduced into this country?—T. L. M.*
ANSWER: The first English Sparrows, according to best obtainable information, were brought to America in 1850, and eight pairs of them were liberated in the spring of 1851.
QUESTION: *What do crickets eat?—R. F.*
ANSWER: Crickets will eat almost any vegetable matter, and even cloth they may find in their haunts.
QUESTION: *Do squirrels eat anything besides nuts?—M. K. L.*
ANSWER: Squirrels eat many vegetable and some animal products. At times they eat the buds, flowers and bark of trees.
QUESTION: *How long do sparrows and robins live and what color are they when they are born?—B. B. G.*
ANSWER: Little is known about birds' ages because of the difficulty of recognizing them year after year. Some of the smaller birds, such as the robin and sparrow, probably live for ten or fifteen years. They have no feathers when they are hatched, their skin being a brownish-pink.
QUESTION: *What is the difference between a hornet and a wasp?—A. N. C.*
ANSWER: The two names are practically synonymous.
QUESTION: *What bird, about the size of a crow, makes a noise similar to that of a cat?—E. W.*
ANSWER: The only large bird we can think of that makes a noise like a cat is the magpie, a large black and white long-tailed bird common over much of the West.
QUESTION: *I have read that toads moult at least four times a year and that they swallow their skins afterward. Is this correct?—R. D. S.*
ANSWER: Yes, this is true. The skin shed, of course, is merely the thin epidermis.
QUESTION: *What are air plants?—C. B. A.*
ANSWER: This term is applied to plants of a great many different groups. Properly speaking, they are those that grow on the bark of trees or on other objects, but do not derive any nourishment from their host.
QUESTION: *What is the difference between a cougar, a puma and a mountain lion?—T. Y. R.*
ANSWER: The three names all refer to the same animal.
QUESTION: *How can I root the wild azalea or honeysuckle? I have tried root cuttings with no success.*
ANSWER: This plant may be increased by cuttings of mature wood two or three inches long in late summer and placed in sand under glass. They also may be increased by grafting on other roots.
QUESTION: *Recently I saw what I thought was a humming-bird hovering near some blooming verbenas. Close inspection revealed that it was a large insect. It hummed like the humming-bird, and poised in much the same manner. What was it?*
ANSWER: The insect was a sphinx moth. There are many species; one common kind, in its larval form is known as the green tomato worm.
QUESTION: *From the bark of what tree do the Indians make medicine?—W. S.*
ANSWER: The bark, twigs and roots of a great variety of trees and other plants are used. Cinchona bark, from which quinine is made, originally was used by the Indians of South America.

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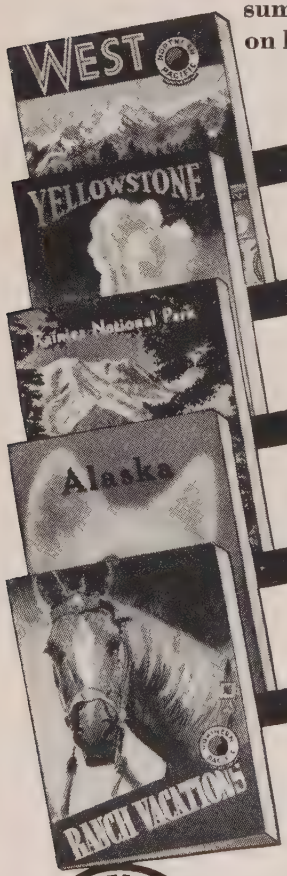
Take your pick and plan a western vacation this summer—a trip that will give you a new lease on life, a vacation you will never forget.



WEST? NATURALLY!

It's the urge of the race—Westward Ho! Minnesota, "land of sky blue water;" North Dakota's weird badlands where Theodore Roosevelt ranched; Indian country; lumbering and mining empires; Alpine wilderness of Mt. Baker, Mt. Hood and the untrodden Olympic Mountains; exotic Pacific Northwest Cities.

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You'll go sometime—everybody does—it's the only place of its kind in the world. You're lucky if you go this summer. The new Red Lodge Highway is open, skimming the "top of the world" for miles. Feast on it on your Wonderland Tour, one way via either Gardiner or Cody!

RAINIER? CALIFORNIA?

. . . lofty snow-crowned Rainier, the mountain so superb it is a national park in itself, with mighty grandeur, all-year sports in the summertime, hospitable lodges!
. . . and as for California, you can economically arrange your California trip from the start to include *ALL* the Pacific Coast.

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. . . land of the midnight sun. Goal of untamed mountain sightseeing by ship while metropolitan orchestras play and other luxuries attend you. Quaint primitive people wresting livelihood from sea and mountain; totem poles, Mt. McKinley Park, Matanuska, far north trails—GOLD! Yet you travel in modern ease and comfort.

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You can't help but RELAX out in the bracing Montana-Wyoming Rockies. Sure-footed ponies; winding mountain trails; roping, riding, life in the open; luxuries and comforts if you prefer them—primitive fun for those who like roughing it. For good fun, good health and a rip-snorting good time, pack up your duds and go to a dude ranch.

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New Association President

Mr. Horace M. Albright, who was associated with the National Park Service from its inception in 1916 until 1933, has been elected president of the American Planning and Civic Association. Mr. Albright succeeds Mr. Frederic A. Delano, who continues to serve the Association in the capacity of Chairman of the Board of Directors. Mr. Albright is a member of several conservation organizations, the Sierra Club of San Francisco and the Explorers' Club of New York City. With F. J. Taylor, he was the author of *Oh, Ranger!* a book on the National Parks, and in 1933 was awarded the Pugsley gold medal by the American Scenic and Preservation Society for distinguished service in the cause of natural beauty conservation in the Parks.

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NATIONAL PARK
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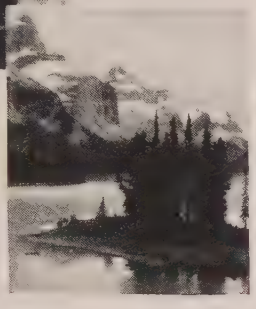
Rx *for People who have been Everywhere*

Breath-taking peaks to climb or just admire.



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Kansas City.....414 Fairfax Bldg.
Los Angeles.....607 S. Grand Avenue
Minneapolis.....634 Marquette Avenue
New York.....673 Fifth Avenue
Montreal.....360 McGill Street
Philadelphia.....1500 Chestnut Street
Pittsburgh.....355 Fifth Avenue
Portland, Me.....Grand Trunk Ry. Station
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CANADIAN NATIONAL
TO EVERYWHERE IN CANADA

MARS ONCE MORE APPROACHES THE EARTH

(Continued from page 306)

extent. White spots and mists frequently observed imply the presence of clouds and frost. Time and again seasonal changes have been observed; the melting of the polar cap, the strengthening of the canals leading equatorward from it in all directions, and the green appearance of the dusky markings, deepening with the advance of spring, lead to but one conclusion—that vegetation may reasonably be assumed to exist on Mars. As the Martian summer draws to a close, the green markings slowly change to brown, and the polar cap, which dwindled almost to nothing or completely disappeared during the summer, once more begins to increase in size. The fact that these surface changes on Mars can be observed only for about six months of its two-year and two-month period of revolution with respect to the earth, and during much of that time under very poor conditions, has greatly slowed up the advance in the study of its surface features.

Venus, so brilliant in the evening sky during the fall, winter and early spring, is now in the morning sky gradually separating from the sun, and on May 24 will be at its greatest brilliancy. It will then rise nearly two hours before the sun.

Jupiter is now in Sagittarius and rises before midnight. Saturn is in the morning sky and rises about two hours before the sun in Pisces.

Mercury is too near the sun to be seen in May, but a most remarkable phenomenon will occur on May 11 when this planet, because of the position of the earth at the time, will seem to graze the sun's limb for about one hour. This will be visible only from southern Asia, the Philippines, western Australia and central and southern Africa. The last transit of Mercury, as this phenomenon is called, occurred ten years ago.

New Garden Sprayer

A new and more efficient garden sprayer that attaches to your garden hose is now available from a well-known insecticide manufacturing company. The ingenious device consists of a fine spray nozzle and a "cartridge chamber," the latter holding the powdered insecticide that dissolves in the water when the hose is turned on. A disk at the valve end of the cartridge chamber induces a whirling motion in the water, assuring complete dissolution of the powder and a full-strength solution for combating insect pests.

Allegany Nature School

On July 4 the 1937 session of the Allegany School of Natural History will open under the direction of Dr. Robert B. Gordon of Ohio State University. The session will continue through August 21. College credit courses in zoology, entomology, ornithology, botany and Nature study will be offered, and these courses are of particular interest to teachers, college students, camp leaders and naturalists. Full details may be obtained from Esther W. Eno, Buffalo Society of Natural Sciences, Buffalo, New York.

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ON THE NEW DENVER *Zephyr!*

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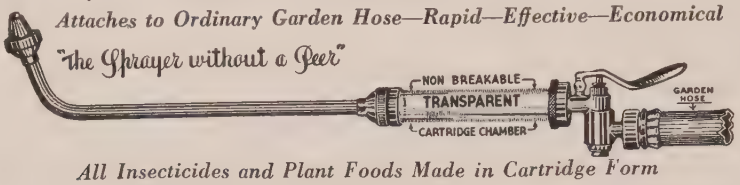
Attaches to Ordinary Garden Hose—Rapid—Effective—Economical

"the Sprayer without a Peer"



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NICOSTICK cartridges (Nicotine and Fish Oil Soap), an ideal and complete insecticide for the control of sucking insects, such as Aphis, Thrips, Green Flies, Plant Lice, etc. An effective repellant when used on trees, shrubs and plants for keeping dogs away.

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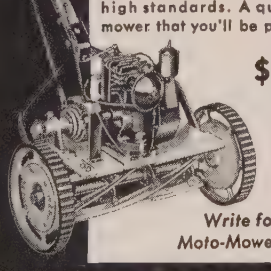

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BELDT'S AQUARIUM 3140 Crescent Av. St. Louis, Mo.

MAKING A SMALL GARDEN LOOK LARGER

(Continued from page 278)

an odd triangular shaped garden with an ugly brick wall at one side was solved by heavy planting against the wall, a low hedge on the open side and a flagstone path ambling down to a trellised gate at the rear. A trellis was also effectively used in another small city garden to conceal an impossible tin garage.

All these gardens had lovely flowers and plants in correct proportion to their size, and all showed signs of careful planning.

In my own garden a sundial or a comfortable garden bench, perhaps made of rose-colored cement, could have been used instead of the bird bath at the far end. The bench, with a white clematis vine or a pink rambler forming a shading arch above it, would have been an excellent substitute for the bird bath and hollyhock background. A sundial certainly will attract the eye but it does not add to the impression of coolness so often needed in a small garden.

Had the garden been just a bit larger, a gay umbrella with its attached table and accompanying chairs placed at the end would not only have focussed attention but would have invited relaxation.

With this slightly larger garden an actual pool planted with water lilies might have been used. These, in the form of small sunken tubs surrounded by rock gardens, look cool even on the warmest days, but they are not to be recommended when there are puppies and babies in the family, as the puppies insist on bathing in them and the babies invariably fall into them.

The result of thus planning to make my garden look larger was all that could be desired. Indeed, I could scarcely believe in the miracle I had accomplished. My small dreary back yard not only looks like a pleasant fair-sized garden but is in fact a haven of refuge where I escape from planning meals to a delightful grubbing in the earth.

Gardens and Gardening

The sixth annual edition of *Gardens and Gardening,* equalling its predecessors in beauty and presentation of material, has just come to hand from the presses of The Studio Publications, Inc., New York. Each yearly edition of this publication is a supplement, and does not supersede former volumes. Believing that the foundation for all gardens is the design, through which the gardener's own little world is created, the entire issue is devoted to this subject, paying particular attention to the needs of the new owner. To Mr. C. Geoffrey Holme, well known for his philosophy of design and an enthusiastic amateur gardener, has been delegated the task of providing garden designs for different types to be used for varying purposes. This he has done to perfection, illustrating his articles with his own drawings. The usual large number of beautiful garden photographs are present, several of which are in natural color. Studio Publications offer the volume for $3.50 paper bound, $4.50 cloth bound.

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The ANDREWS GEYSER uses pool water over and over. "Pinhole" stream keeps fountain playing. Inexpensive to operate. FREE folder.
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IN MAY—
ROWLAND E. ROBINSON

(Continued from page 263)

making a wilderness home. "During the season of sugar making," it reads, "Josiah became intimate with the Canada jays, impertinent thieves that they were; they were company, and so were the friendly chickadees and nuthatches, and woodpeckers that bored the logs of the house for grubs and drummed on the resonant stick chimney, and he made friends with a solitary old crow, though they were likely to fall out after corn-planting. Bluebirds brought the color and song of heaven down to the clearing, and robins came, and black birds thronged the border of the marsh, where open pools began to form, into which returning waterfowl dropped to rest and feed. Stumps, logs, and wintergreen-clad cradle knolls began to show above the snow. Partridges drummed far and near in the purpling woods. The snow and ice disappeared magically, the black mould of the clearing was laid bare, and the blue water of the creek shimmered in the sunlight down to the slumpy ice of the bay, and there were the sounds of running brooks, the crackling croak of frogs and trill of toads, and lo! the miracle of spring had wrought its magic transformation."

One feels an unusually intimate kindliness toward this author and a wistful suggestion of immortality. It is easy to agree with John Farrar that "if a great many of us hadn't been literary snobs for the last 50 years, we would have canonized this simple man many moons ago", and there is an enduring springtime delight in knowing that the last sentence written by Robinson on his grooved board told of how "the lifting veil disclosed the last flash of blue plumage disappearing in the mist of budding leaves".

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Diana Thorne's DOG COLUMN

LET's consider the Scotch terrier. In fact, at the moment, Mac, my Scotty, sits somberly considering me and my present activity.

His gravity, habitual with him as to most of his tribe, and the sober garb of him, belies his humorous and philosophical outlook. It often deceives the observer not intimately acquainted with his kind.

Kin of all the terrier family and bred originally for much the same purpose as the fox-terrier, the Scot's mental constitution, like his frame, is vastly different. Not for him is the giddy, irresponsible, frivolous behavior of his fox-terrier kinsman. The twinkle of his almond-shaped eyes contradicts the solemnity of his expression; but never have I known him to do a ridiculous or impulsive thing, or to act without due thought of consequence.

Never, either, is he bored (or, at any rate, seldom does he show it) if, by force of circumstance, natural activity in the open is denied him. He is equally the perfect companion for the sedate or active; for young or old.

All dogs are devoted. All are loyal. All have understanding far beyond our conception. But the Scot has these qualities to a high degree. Not without reason did Kipling select him as the prototype of his inimitable poems; not, certainly, merely because he had a Scot friend at his side and preferred him to any other dog.

When conditions force me, as sometimes happens, to take long and wearisome journeys in connection with my work, facing the prospect of social activity, intense preoccupation and little spare time for myself, it is Mac (of all my dogs) I take with me.

Perfect traveler and at home equally in motor-car, train, plane, ship, hotel or strange house, he never fails in adaptability to trying conditions. He is never anything but a thoroughly good-mannered, good-tempered and sociable gentleman. Further, he can thrive on less exercise and more abuse of regularity than any other breed of dog.

Mac is twelve now. He has never been ill. He is in the pink of condition still. Nor could I desire a better guardian or protector. As slow to make a friend as he is to take offence or to be aggressive, his friendship, once given, is permanent. His attack, on the other hand, when the situation warrants it, is a determined, deadly and righteous one.

I know that I can never be held up while Mac is alive and beside me. Nor (which is equally important sometimes) could I make an error in judgment in respect of a chance acquaintance. Mac's intuition is unerring and his advice is never withheld!

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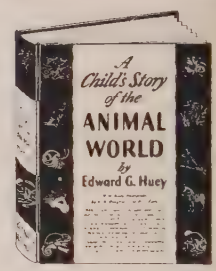

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Chappel Award

For her untiring efforts in behalf of American dogdom, Mrs. M. Hartley Dodge, of Madison, N. J., was awarded the third annual Chappel Award, presented at the opening of the Westminster Dog Show recently held in Madison Square Garden, New York. The presentation was made by John G. Bates, president of the Westminster Kennel Club, after the Chappel Kennel Foundation's award committee had pointed out at the judges' luncheon held in connection with the dog show that Mrs. Dodge's ability as a breeder and an exhibitor and her unfailing interest in and support of dogs had earned her the plaque for the year 1936. Mrs. Dodge was especially praised for her supervision of all prospective legislation relating to dogs in New Jersey and neighboring states and for her work in partially stamping out rabies in that region.

Mount Rainier Amphibians

An excellent little mimeographed booklet on the frogs and salamanders of Mount Rainier National Park, prepared by Professor James R. Slater of the College of Puget Sound, recently has been issued by the Park. Ask for Volume XIV, Number 4, of Mount Rainier National Park Nature Notes from Park headquarters, Longmire, Washington.

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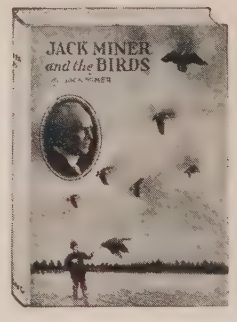

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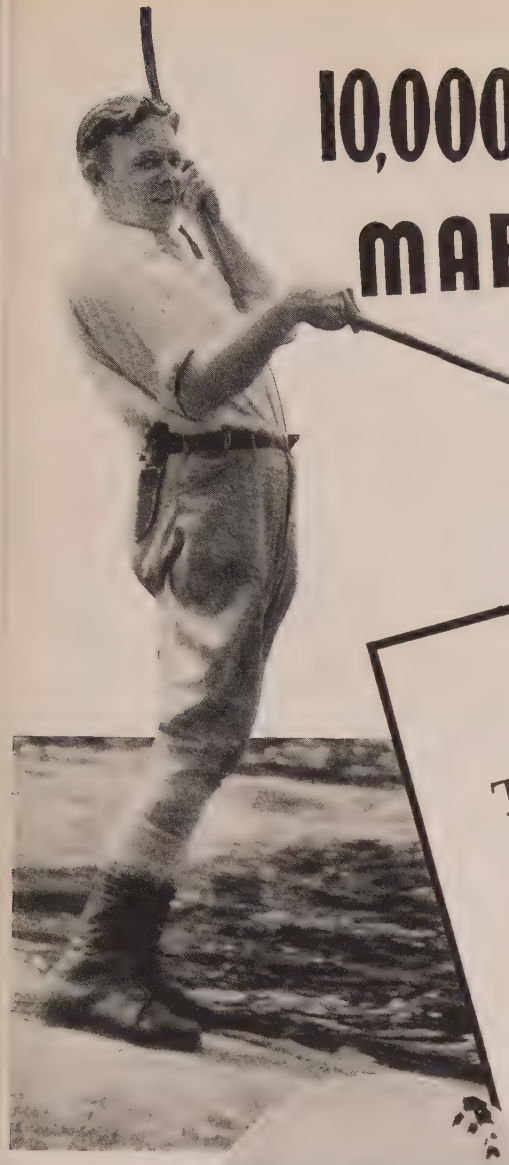

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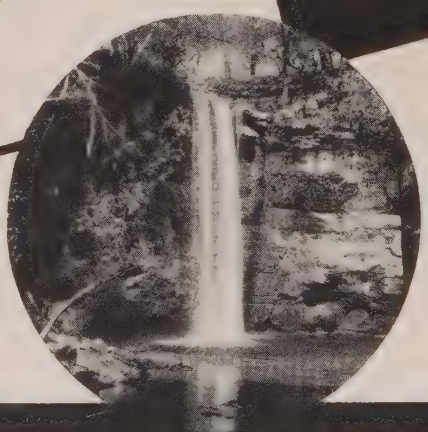

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Photographic Notes

BY SAMUEL BROWN

SOCIETY NOTE: MRS. WREN, AFTER AN EXTENDED VISIT IN THE SOUTH, HAS RETURNED TO HER SUMMER HOME ON BRANCH STREET

Birds

The arrival of June ushers in the busiest season for the alert Nature photographer. Summer offers countless subjects for our cameras such as insects and the flowers that have begun to bloom; the garden presents an array of color; small animals and the birds on every side keep reminding us that Nature is in her gayest mood. Here indeed is enough to keep us active for the next few months.

Undoubtedly one of the most interesting groups of subjects is our feathered friends. Their many activities, including nest building, egg laying, incubating and teaching the young to fly, make fine pictures. Record pictures of birds are easily taken with the simplest equipment while life history and action pictures may be made with any camera that has a fairly fast lens and a shutter permitting short exposures.

One of the best types of cameras for bird photography, and incidentally for practically every phase of Nature photography, is one equipped with a double extension bellows, a lens that has a maximum opening of at least F. 4.5, a shutter permitting speeds as fast as 1/100 of a second and rising and sliding front and features which permit the use of supplementary lenses for wide angle and telephoto effects. These cameras are generally referred to as film pack or plate cameras.

Record pictures of birds are easily made by setting up the camera near where the bird is expected to appear and focused on a spot that has been baited. A string attached to the shutter release permits the shutter to be operated from a distance and snapped as soon as the subjects have assumed the proper attitude. Some birds, however, are very timid and apt to remain away from the spot that has an unfamiliar object close by. Where this is so it is necessary to accustom the bird to the camera by introducing it gradually. This is accomplished by setting up the camera near the nest for about an hour and removing it. The same thing is done the second day and succeeding days but increasing the time each day until it is possible to leave the camera for some time without keeping the subject away. This period of education may take some time but is well worth the effort in the pictures that are likely to result.

Life history pictures of birds may be made at the nest and are most valuable when they show the subjects engaged in some activity such as feeding, nest building, etc. The same procedure for regular record pictures may be followed but here the camera must be set up in a tree for the best point of view. An excellent accessory is the Kodapod or Optipod which permits attaching the camera to a tree branch and locking it securely so that it does not move. The camera is carefully focused on the nest and a string attached to the shutter release so that it can be operated from a distance. Watching the subject with a pair of field glasses or binoculars will be of considerable aid in securing good shots.

The bird may be made to take its own picture by any one of several methods. The simplest is to attach a black thread to the release and run this across the nest so that a slight pressure will affect the release. If the thread is very fine there is no danger to the subject. Be sure to set the camera far enough away so that some of the surroundings are included in the picture. Many persons make the mistake of taking the picture too close and find that the subject is disappearing out of one side of the border.

When using the camera in a tree, it is a good idea to camouflage it with some branches and leaves, making sure that the lens remains unobstructed. This is a big aid in introducing the bird to the camera and they will quickly fall into their natural routine after the camera is all set.

"LUNCH TIME" 1/50 SECOND, F.11

It is necessary to exercise some caution when photographing birds. There are many that never become accustomed to an unfamiliar object. With these it is necessary to use a telephoto lens in order to photograph them. Never persist if a bird does not return to its nest when you are present; its absence from the nest may do irreparable harm to the young. If, in photographing these subjects it is necessary to remove some of the surroundings, be sure to replace them, since birds depend on leaves and branches for protective shade.

Careful selection of stop and exposure is necessary. It is always best to choose a shutter speed that will stop any movement likely to occur and then set the diaphragm accordingly. High speeds are rarely necessary—1/25th of a second is generally sufficient to stop most motion except where the birds are actually in flight. Fast panchromatic films are most useful since they permit the utilization of all the available light.

Good bird pictures are not hard to make and afford much satisfaction both in taking and viewing. Pictures of this type are valuable for studying the habits and life of some of Nature's most beautiful children.

Films

The last type of film to be discussed by this department is infra-red. Photography in the infra-red region of the spectrum is a comparatively new development and requires a technique different from that employed with regular film. Its value in science can hardly be estimated while the amateur will find a new fascination in its many applications for unusual pictures.

To understand infra-red photography it is necessary to give a brief explanation of the spectrum. Of all the rays known to science, only a comparatively few are visible and this small group is known as light. On

one side of the visible spectrum are the ultra-violet rays while the infra-red rays occupy the other end. Both of these are invisible. Until recently it was possible to photograph only with the visible and ultra-violet rays. With new sensitizers it was found that emulsions could be made that would be affected by infra-red radiations. Since these emulsions, in addition to being sensitive to infra-red, are also very sensitive to visible and ultra-violet light, it is necessary to keep these from reaching the sensitive surface. For this purpose a filter that absorbs visible light is necessary and a true infra-red filter appears to be absolutely opaque or black. However, any dark yellow or red filter may be used with good results.

Any camera may be used to make pictures by infra-red rays and any lens may be employed. However, since infra-red rays do not come to a focus at the same point as visible light, it may be necessary to compensate for this if long focus lenses are used. This is approximately 1/200 of the focal length and may be ignored where short focus lenses are used. In the case of old cameras, the bellows may transmit infra-red and fog the plates, but this is rare.

It is impossible to give accurate exposure data because there is no known way of measuring the number of infra-red rays. In good light for open landscapes, the exposure required is approximately 1/10th of a second at F. 4.5 when using a Wratten A filter. It is always best, however, to take one picture at the exposure judged to be right, a second at double that time and a third at four times as much and choose the best negative for use.

Some of the applications of infra-red photography are very interesting. Among other things, it is possible to photograph clearly a landscape that is almost obliterated by haze because infra-red rays come through almost unobstructed. Infra-red pictures are characterized by an almost black sky and many pseudo night pictures are made in this manner. Pictures may be taken in total darkness with the aid of a heating unit such as an electric flatiron which emits invisible infra-red rays. Chlorophyll, the green dye in leaves and grass, reflects infra-red rays in abundance and these register as white on the plate, giving the appearance of being covered with snow.

Unlike ordinary light, which is stopped by the skin, and unlike X-rays which pass completely through, infra-red rays penetrate the skin but a short distance. This makes infra-red photography invaluable for the study and cure of skin diseases. In a like manner, plant and animal life may be studied. The heat reflecting and transmitting qualities of certain textiles may be recorded with the aid of these rays.

New uses for infra-red photography are being found almost daily and its application is simple and interesting. The Eastman Kodak Co., Rochester, N. Y., has prepared an interesting leaflet entitled *Infra-Red Photography* which will be sent to all NATURE readers without charge.

Trade Hints and New Books

The story of the manufacture of present-day photographic film, equipment, etc., is an unusually interesting one. This story is told in a booklet entitled KODAK which contains

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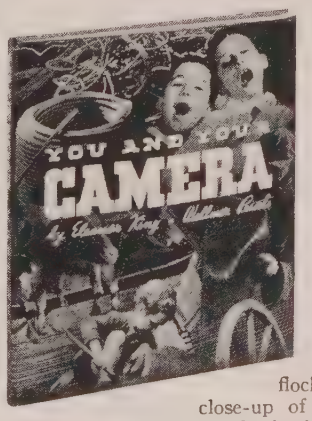

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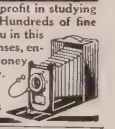

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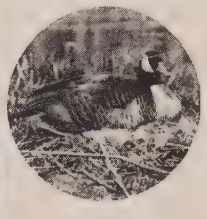

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Our readers, particularly those living in Chicago, will be pleased to learn of a new department recently set up by the Central Camera Co., 230 South Wabash Ave., Chicago, Ill., which will be known as the Free Customer Service. This is being maintained in the interests of photographers everywhere and persons with problems are urged to consult with the experts of the Central Camera Co. Be sure to mention NATURE MAGAZINE.

Henry Herbert, 483 Fifth Ave., New York, N. Y., announces the *Pioneer Camera.* Embodying all of the features of standard film pack cameras including double extension bellows, F. 3.5 lens, rising front, etc., etc., it is reasonably priced. Henry Herbert will be happy to send literature containing full details to anyone mentioning NATURE MAGAZINE.

Dr. Walther Heering, exponent of the Rolleiflex, has written a new and valuable book entitled *Night Photography.* Covering every phase of night and artificial light photography and such subjects as fireworks, flashlight photography, infra-red, lightning, and many other phases, this book is a necessity to the complete photographic library. Each point is exhaustively and practically discussed. The amateur will immediately recognize a valuable text expertly written by an expert photographer. Distributed by Burleigh Brooks, 127 W. 42 St., New York, N. Y. Price $1.00.

One of the most complete photographic texts to come to this writer's desk is entitled *Photographic Handbook,* written by Sigismund Blumann, F.R.P.S., editor of the *Photo Art Monthly.* Carrying the authority backed by wide experience, the book contains a thousand and one facts to which one will make constant reference. The answer to almost any photographic question may be found in one of the 138 pages. Formulas for practically every process are given, hints on printing and enlarging are an essential part while pertinent facts on filters, safe-lights, mounting, desensitizing, reduction, and toning make the book an invaluable aid and an essential reference. Published by Photo Art Publishers, 483-498 Monadnock Bldg., San Francisco, Calif. Price in paper binding $1.00; in cloth $1.50.

The photographic department of NATURE MAGAZINE is devoted to its readers interested in photography and maintains a service which renders assistance with any photographic matter. You are invited to take advantage of this service. Address all photographic inquiries to Samuel Brown, NATURE MAGAZINE, 1214 Sixteenth St., N. W., Washington, D. C.

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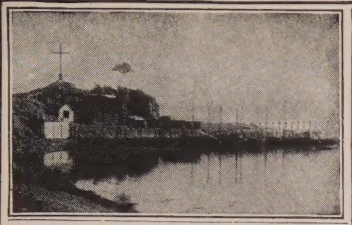

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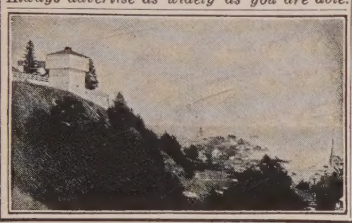

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Wild Life Committee Reorganized

The Committee on Wild Life of the Division of Biology and Agriculture of the National Research Council has been reorganized. The personnel of the present Committee follows: H. E. Anthony, Chairman, C. C. Adams, Henry I. Baldwin, R. E. Coker, William S. Cooper, Herbert C. Hanson, G. E. Nichols, E. A. Preble and A. H. Wright.

The intimate relation that exists between wild creatures and our civilization is emphasized by modern developments, in that the encroachments of agricultural and industrial interests have resulted in a continuing diminution of the areas available as natural habitats. As an example, there is the all-too-prevalent practice of governmental and other agencies of "cleaning up" natural areas in their emergency projects. Other demands of increasing human populations are continually exacting a greater toll on our birds and other wild creatures. The danger of their over-exploitation by the devotees of sport, with its commercial accompaniments, is particularly serious. Recognizing these facts, the Division considered it best to reflect the need for permanent preservation of habitats in the title of the Committee, which now becomes "Committee on Wild Life and Nature Reserves."

It is the earnest hope of the officers of the Division of Biology and Research that the studies of the newly appointed Committee will help to rally the forces favoring the permanent reservation of important natural areas, in an effort to counteract, as far as may be, the harmful effects of unwise drainage, the destruction of the vegetative cover of natural habitats, and the undue exploitation of our native wild animals and plants by sport and commercialism.

For Dog Lovers

An attractive little 64-page booklet of interest to dog lovers has just come to hand. While the fore part of the booklet relates to a variety of accessories to the life of the dog—ranging from a safety razor to a tweed ulster—the bulk of the book is devoted to information and advice on the care of the dog. Copies of this may be obtained by writing to Dog Editor, Nature Magazine, 1214 16th Street, Washington, D. C., enclosing a three-cent stamp.

A Correction

On page 9 of the rotogravure section in our May issue we published a picture taken in Rocky Mountain National Park. It had an erroneous caption. Properly identified, the snow-capped peak is Longs Peak, of which we see the north and west faces. Pagoda Peak is seen in the center background, with Chief's Head Peak at the right. These latter two form the back wall of Glacier Gorge.

In making this correction may we say that the original picture was from the files of the National Park Service, and that the caption we used was the precise caption supplied by the Park Service with the picture. We assumed that, in view of the source, the scene must be correctly identified.

PWA Shell Project

A specialized study of the use of shells is being carried on under a PWA Archeo- and Ethno-conchology project at New Orleans, resulting in one of the most interesting exhibits of various types of shells in this country. The purpose of the study is to seek out and assemble all possible information pertaining to the uses of shells by man. Specimens have been obtained from all parts of the world, and a more recent addition, from Arkansas, leads scientists to believe a trade route between that part of the country and the Pacific Coast may have existed centuries ago. Sixty maps have been arranged illustrating the distribution of the different uses of shells. James A. Fortier, president of the Louisiana State Museum, believes the collection is the largest gathering of specimens and data on the subject in the world.

New Antelope Sanctuaries

According to information received from the Department of Agriculture, two new Federal antelope sanctuaries have been established in the heart of its native range in southeastern Oregon and northwestern Nevada. One is known as the Hart Mountain Antelope Refuge, comprising more than a hundred thousand acres in Oregon and Nevada, and the other as the Charles Sheldon Antelope Range, the latter area adjoining and supplementing the refuge of the same name established six years ago in Nevada.

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In June—Dan Beard

By HOWARD ZAHNISER

LIKE pleasure in music, delight in Nature may be the result of an acquired taste, and such are the paradoxes of living that often the eleventh-hour convert is the more devoted. Those who have such high regard for the out-of-doors that they are willing to give time and energy and money for its preservation might be numbered by the thousands today. It would be surprising to find out how many of them are city-bred, and I dare say it would be amazing, if possible, to trace among these folks the extensive and beneficial influence of the Boy Scouts of America. The suggestion is particularly pleasing because it is a prelude to reminiscence, and I am somehow conscious of the fact that this reminiscent pleasure is one that I shall share with a great many others.

The Boy Scouts of America afforded me two opportunities that I shall never forget. The organization gave me a chance to be a sort of soldier when I was too young to join the World War army; I could wear a uniform, salute, and march in parades. I am sorry that I had that chance, for I took it, and I am sorry for all military opportunities for boys. But the Boy Scouts gave me another chance that I also took, and I am glad for that and glad that the same opportunity is offered to more boys today than in the years I shall soon be able to refer to as my youth. That was the chance to be a sort of outdoorsman, to hike, to sleep on the ground, and to see wild rabbits. Along with it was the introduction to a few books that I have been thinking of lately, including drawings that made everything seem so simple, easy, and interesting that the reading and seeing became almost the doing. It is sometimes difficult to distinguish them even in memory, and I doubt that there could be any more pleasure in reliving those boyhood days than there has been in rereading those books.

These thoughts might have been suggested by the forthcoming jamboree of the Boy Scouts, but the fact is that the name of Dan Beard has prompted the reminiscences. I have come to have a peculiar interest in the birth months of those who have written of the outdoors, and for several days now the urgency of this page has been giving special emphasis to the importance of knowing something about those who were born in June. It was a happy discovery that June is the natal month of Daniel Carter Beard, happy not only for the pleasure of rereading his books but also because, although it was in 1850 (on the 21st, the solstice) that he was born, Dan Beard—National Scout Commissioner, Honorary Vice-President of the Boy Scouts, Associate Editor of *Boy's Life*—is still very much alive, and there is an opportunity to pay tribute.

This is my tribute: Dan Beard's books will provide good browsing for your June arm-chair, no matter how old you may think you are. I am not going to even name all of his books here. You can find them listed in *Who's Who*. Many of them I did not know as a boy and have since found to be good adult reading—if I may for the moment pose as an adult. Here is my suggestion:

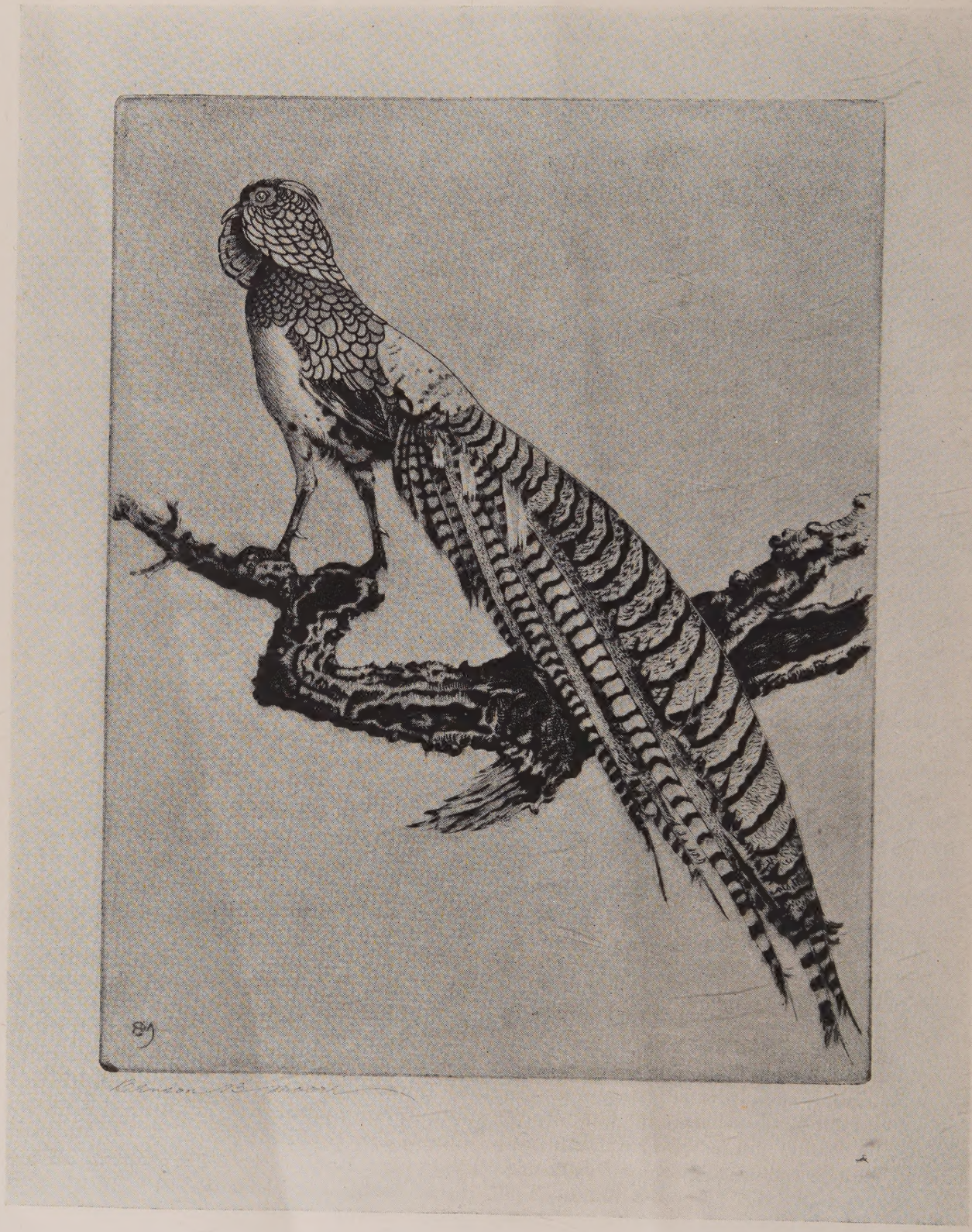
Find a copy of *Dan Beard's Animal Book and Camp-Fire Stories,* published in 1907, written as the author says for the fun of it, and illustrated with his drawings and with a frontispiece in colors by him. Don't neglect the preface, wherein Beard tells that he had a "jolly time with Mother Nature and by personally conducted investigations I learned many of her secrets, so that before I reached the age of six I could instruct some of my elders." You are in no danger of stopping with the preface.

If you are unable to find a copy of this book, you can find the same material (and more, too) in two later volumes: *The American Boys' Book of Wild Animals* and *The American Boys' Book of Birds and Brownies of the Woods*. If you haven't known these books as a youngster, you will understand their effectiveness when you read in the foreword of the bird book: "Therefore, do I write books for you young people, trying to fill your souls with such a love for all outdoors that you will protect and care for what is left of our wonderful wild life. . . . What I want to encourage in the young reader is a sane, comprehensive love for the world he lives in." There are many who can make tributary acknowledgment that Dan Beard has succeeded. Not a little of this success must have been due to the persuasive and illustrated eloquence of such books as *Boat Building and Boating* and *Shelters, Shacks and Shanties*. In a city and along a stream too small even for canoeing, I read these with the serious interest of a bride studying her cook book.

I have one other book to recommend by title—*The American Boys' Book of Bugs, Butterflies, and Beetles.* Beard has a better name for the preface of this book. He calls it "Fore Talk," and in it tells how "as a barefooted little urchin in northern Ohio he made his first scientific investigation and discovered that grub-worms were baby beetles." Like the other books, this volume has no pages that are not interesting, and no small amount of the interest is in Beard's drawings. You will enjoy them.

It also seems interesting to note that June 6 this year is the hundredth anniversary of the birth of Dan Beard's brother, James Carter Beard, who died on November 15, 1913. He, too, was an illustrator and author. (Their father was an artist, and William Holbrook Beard, their uncle, was noted for his paintings of animals, especially humorous story pictures and animals acting like human beings.) *Curious Homes and Their Tenants* was one of James Carter Beard's books, and he also wrote and illustrated in color a delightful (and now quaint) quarto volume entitled *Little Workers: A History of Some of God's Little Creatures that Labor without Hands.* I have just read them for the first time—and with interest.

Any reader who enjoys these books of Dan Beard and his brother in June as much as I have in April will have as many hours of browsing as he may care to spend indoors in June. Thus reminiscence suggests anticipation.



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